FORESTRY COMMISSION

# REPORT OF THE COMMITTEE ON HEDGEROW AND FARM TIMBER

## 1955

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HER MAJESTY'S STATIONERY OFFICE
1955

To THE FORESTRY COMMISSIONERS,

20th July, 1955.

Gentlemen,

COMMITTEE ON HEDGEROW AND FARM TIMBER

In pursuance of the Minute of Appointment, signed by the Minister of Agriculture and Fisheries and the Secretary of State for Scotland in January, 1953, I have the honour to submit the report of the Committee on Hedgerow and Farm Timber.

I am, Gentlemen,
Your obedient Servant,
MERTHYR,
*Chairman.*

# COMMITTEE ON HEDGEROW AND FARM TIMBER

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# *Contents*

| *Chapter* | *Paragraph* | *Page* |
|---|---|---|

I. INTRODUCTION

| | | |
|---|---|---|
| Appointment and terms of reference | 1 | 7 |
| Meetings and evidence | 2 | 7 |
| Field visits | 3 | 7 |
| Acknowledgments | 4 | 8 |
| Scope of report | 5–8 | 8 |

II. HEDGEROW AND FARM TREES AS A SOURCE OF TIMBER SUPPLY

| | | |
|---|---|---|
| Historical background | 9–10 | 9 |
| Post-war felling and felling control | 11–16 | 9 |
| Existing stocks of standing timber | 17 | 11 |
| Species | 18 | 11 |
| Volume | 19–20 | 11 |
| Nature of timber | 21–23 | 12 |
| Size | 24 | 13 |
| Age distribution and replacement | 25–26 | 13 |
| Increment and rate of felling | 27–28 | 14 |
| Demand for timber | 29 | 14 |

III. INFLUENCE OF HEDGEROW AND FARM TREES ON THEIR SURROUNDINGS

| | | |
|---|---|---|
| Introductory | 30 | 15 |
| Shelter | 31–32 | 15 |
| Shade | 33–35 | 16 |
| Effects on soil | 36–37 | 16 |
| Climate | 38–40 | 16 |
| Effects of roots and branches | 41–44 | 17 |
| Erosion | 45–46 | 18 |
| Animal, bird and plant life | 47–48 | 18 |
| Amenity | 49–59 | 19 |
| Source of timber | 60 | 22 |
| Trees as a crop | 61–63 | 22 |
| Conclusion | 64 | 23 |

IV. AGRICULTURAL CONSIDERATIONS

| | | |
|---|---|---|
| Attitude of landowners and farmers | 65–68 | 24 |
| Trees and farming practice— | 69 | 25 |
| Mainly arable | 70–72 | 25 |
| Mainly grassland | 73–75 | 26 |
| Alternate husbandry | 76 | 27 |
| Upland and rough grazing land | 77 | 27 |
| Land tenure— | 78 | 27 |
| Owner-occupiers | 79 | 28 |
| Landlords and tenants | 80–84 | 28 |

| Chapter | Paragraph | Page |
|---|---|---|
| Need for financial assistance | 85 | 29 |
| Education | 86 | 30 |
| Technical advice and assistance | 87 | 30 |

V. ROADSIDE TREES

| Chapter | Paragraph | Page |
|---|---|---|
| Introductory | 88–89 | 31 |
| Amenity considerations | 90–91 | 31 |
| Timber from roadside trees | 92 | 32 |
| Species | 93–94 | 32 |
| Road safety | 95–96 | 32 |
| Road construction and maintenance | 97–98 | 33 |
| Legal considerations | 99–103 | 33 |
| Tending of roadside trees | 104–105 | 34 |
| Technical advice and skilled assistance | 106 | 35 |
| Information and education | 107 | 35 |
| Financial considerations | 108 | 36 |

VI. OTHER SITES FOR GROWING HEDGEROW AND FARM TIMBER

| Chapter | Paragraph | Page |
|---|---|---|
| Introductory | 109 | 37 |
| Parkland | 110 | 37 |
| Common-land | 111–112 | 37 |
| Wasteland around industrial establishments and mineral workings | 113 | 38 |
| Railways and canals | 114–116 | 38 |
| Airfields | 117 | 39 |
| Land held by service departments | 118 | 39 |
| Disused military installations | 119 | 39 |
| Coastal areas where there is a danger of erosion or flooding | 120 | 39 |
| Conclusion | 121 | 40 |

VII. STEPS WHICH SHOULD BE TAKEN TO PROMOTE THE GROWING AND TENDING OF HEDGEROW AND FARM TIMBER

| Chapter | Paragraph | Page |
|---|---|---|
| Introductory | 122 | 41 |
| (1) *By Landowners and Tenants* | | |
| Farms and estates— | | |
| Planting | 123 | 41 |
| Maintenance and protection | 124–128 | 42 |
| Succession | 129 | 42 |
| Choice of species | 130 | 43 |
| Agreements between landlords and tenants | 131 | 43 |
| Co-operative forestry societies | 132 | 43 |
| Planting on roadsides | 133–136 | 44 |
| Planting on other sites | 137 | 44 |

| | Paragraph | Page |
|---|---|---|
| (2) *By Administrative Action* | | |
| Education and publicity | 138–142 | 45 |
| Technical advice | 143–146 | 46 |
| Practical assistance | 147–149 | 46 |
| Co-operative forestry societies | 150 | 47 |
| Area land surveys and selection of sites | 151–152 | 47 |
| Financial assistance | 153–154 | 48 |
| Research | 155–157 | 49 |
| (3) *By Legislation* | | |
| Planting by tenants and the Agricultural Holdings Acts | 158–161 | 49 |
| Ownership and maintenance of roadside trees | 162 | 50 |
| Commons | 163 | 50 |
| Control of felling and replanting | 164–167 | 50 |
| SUMMARY OF RECOMMENDATIONS | | 53 |
| APPENDICES | | |
| A—Sources of Evidence | | 57 |
| B—Census of Hedgerow and Park Timber | | 60 |
| C—Summary of Advantages and Disadvantages of Hedgerow Timber | | 61 |
| D—Short Bibliography | | 63 |
| PHOTOGRAPHS | | *Central inset* |

## THE PHOTOGRAPHS

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# REPORT OF THE COMMITTEE ON HEDGEROW AND FARM TIMBER, 1955

## CHAPTER I

## *Introduction*

### APPOINTMENT AND TERMS OF REFERENCE

1. We were appointed in January, 1953, by the Minister of Agriculture and Fisheries and the Secretary of State for Scotland, acting jointly, with the following terms of reference:

> "In view of the national need to promote timber production, to examine the extent to which the growth of hedgerow timber is compatible with good agricultural practice; and to make recommendations as to the best means of securing the planting and tending of hedgerow timber."

We were subsequently asked to regard these terms of reference as covering small farm spinneys, park timber and roadside trees. We were also advised that, while shelter-belts were outside the scope of the terms of reference, we were free to investigate all aspects of the problem, including the interests of amenity as well as of agriculture and timber production.

### MEETINGS AND EVIDENCE

2. We have held twenty-one meetings including those for the purpose of hearing oral evidence. We have received memoranda and heard evidence from a number of organisations and individuals, listed in Appendix A. The appointment of the Committee was announced publicly in the Press and in a number of journals and periodicals early in 1953, and the notice invited the submission of evidence by all who wished to do so. In addition we invited memoranda and oral evidence from a number of organisations having a special interest in the subject of the enquiry. Most of the latter have assisted us by submitting written contributions and by appointing representatives to attend for informal examination and discussion. We have received letters and papers from individuals, some of whom supplemented their written submissions by giving oral evidence; and we have received technical evidence from a number of departmental and local government officers. We have thus had the benefit, not only of views put forward by interested organisations and specialists outside the government service, but also of much expert advice from the assessors and several other officers representing Government Departments.

### FIELD VISITS

3. We have visited selected districts in England, Scotland and Wales for the purpose of seeing how the evidence applied under field conditions, and of examining examples of hedgerow, farm, park and roadside timber in various settings. In view of the comprehensive survey already carried out by the Forestry Commission in

their Census of Hedgerow and Park Timber and Woods under Five Acres*, we have confined our visits to a few representative districts and estates, instead of attempting a general survey, which in our opinion was neither necessary nor possible. We are nevertheless satisfied that we have seen a fair sample on which to base our conclusions and recommendations.

### ACKNOWLEDGMENTS

4. To all those who have helped us to carry out our investigation, we express our warm appreciation of their services and co-operation. We particularly wish to record our appreciation of the help given to us by those who invited us to visit their estates and farms, and also to pay tribute to the counsel and assistance so freely given to us by the five assessors, whose expert knowledge has been invaluable to us throughout our enquiry.

### SCOPE OF REPORT

5. The trees with which this Report is mainly concerned are those grown in hedgerows, but we have also taken into account small farm spinneys, park timber and roadside trees. We use the expression "hedgerow and farm timber" to cover these four categories which, although they occupy different sites and do not have precisely the same effects on agriculture, nevertheless have in common the fact that they represent the small groups of scattered trees, as distinct from larger woods and forests; and that timber production is not their sole purpose.

6. Several witnesses have expressed regret that shelter belts were not included in our terms of reference. While large plantations which provide shelter from the weather have not been included, small clumps and groups of trees and windbreaks up to about a chain in width have been considered; and to the extent that these often provide valuable protection from wind and weather, and are a common feature on farms and estates, we have taken the question of shelter into account.

7. In the Forestry Commission Census Report No. 2 the term "hedgerow and park timber" includes groups of trees under one acre in extent, as well as strips or belts less than one chain wide; and we regard this definition as broadly covering the scope of our enquiry. In this Report, therefore, the term "hedgerow and farm timber" may be regarded as synonymous with the term "hedgerow and park timber" used in Census Report No. 2, and we have used the latter expression in Chapter II in the passages relating to the census. Wherever it is necessary to refer to one of the four categories individually this is stated, or made clear by the context. We wish to emphasise, however, that this Report does not deal with the main forest and woodland areas, nor in general with small woods exceeding one acre.

8. Although our terms of reference direct us to give special attention to hedgerow timber on agricultural land, we have thought it also within our sphere to give consideration to the growing of timber-producing trees on other types of land on which small plantations or groups of trees could be maintained with advantage.

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*Forestry Commission Census Report No. 2, *Hedgerow and Park Timber and Woods under Five Acres*, 1951. H.M.S.O.

# CHAPTER II

# *Hedgerow and Farm Trees as a source of Timber Supply*

## HISTORICAL BACKGROUND

9. For a long time there have existed throughout our countryside, in addition to the larger woods and forests, substantial quantities of timber in scattered clumps and spinneys, in parks and avenues, along lanes and highways, and to a certain extent in hedgerows. It is probable that much of this timber was naturally regenerated, possibly a heritage from earlier forests, and that a great deal was planted mainly for amenity and ornament, or for estate use, following the enclosures, which reached their peak in the 18th century. While timber from such sources may from time to time have attained a wider market than a purely local one, it seems likely that this source of supply of serviceable timber was taken very much for granted and, no matter how much it was appreciated locally, it does not seem to have been regarded as having any great importance in the national economy and was not, therefore, deemed to be a suitable subject for consideration by the Government.

10. In the 19th century Britain had no national policy, in any modern sense of the term, for the supply of home-grown timber : a *laissez-faire* attitude was the general rule, encouraged by the seemingly unlimited supply of cheap timber available overseas*. The experience of the first World War, however, brought home sharply to the Government the need for maintaining adequate reserves of such an important raw material, and in 1919 steps were taken to set up a permanent forest authority. Between the wars the national forest policy was mainly concerned with large-scale afforestation by the Forestry Commission, and with efforts to encourage the maintenance in a productive state of the much larger areas of privately owned woodlands. During this period little attention was given by the State to very small woodland areas, and none to the planting or tending of trees on farms or in parks and hedgerows ; and there was no State control of felling. In the second World War further wholesale felling of home-grown timber began almost at once. This was not confined to the larger woods and forests, but of necessity also involved hedgerow and farm timber ; and a substantial volume of the reserves of older standing timber required for war purposes came from such sources. Moreover, although a system of control of felling by licence was brought into force at the outset, a limited amount of felling without licence was permitted. The general scarcity of timber led to the felling of a large number of hedgerow, park and similar trees, not only for war needs, but also to meet purely local requirements of timber which was not available from other sources for estate and farm use.

## POST-WAR FELLING AND FELLING CONTROL

11. The great demand for home-grown timber did not end with the war. This was due mainly to the abnormal need for timber for post-war reconstruction at a

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*See *Thirtieth Annual Report of the Forestry Commissioners for the year ending September 30th*, 1949, page 7. H.M.S.O.

time when imports were severely restricted. Moreover, the home-grown timber trade had been encouraged to expand its milling capacity during the war, and was still active in seeking suitable standing timber to meet the demands of the market. Felling, though still subject to the war-time system of licensing control, had to be permitted at a rate which was uncomfortably high in view of the seriously depleted stocks of older and larger-sized standing timber. While the need for conservation was obvious, there were, notwithstanding the system of consumer-licensing, practical difficulties in reducing consumption of home-grown timber at this time; and therefore in the early post-war years felling control was operated so as to conserve young and immature plantations, rather than older and mature timber, into which category most of the hedgerow and park type fell.

12. By 1949, it became possible to give greater weight to the need for conservation and to reduce substantially the total volume of timber licensed for felling. In 1950 the Forestry Commission resumed responsibility for the regulation of felling, which had previously been exercised by the Board of Trade, and put into operation a revised system of licensing within an annual volume quota; and in issuing licences the Commissioners' policy was to have regard not only to total volume but also to the age, type and condition of the standing timber. This policy was directed mainly towards the conservation of thriving, immature plantations; but where applications were made for licences to fell hedgerow and farm timber similar standards were applied. Nevertheless, the revised regulations still permitted an owner to cut and sell without a licence up to 275 cubic feet per month. This, whilst being a reasonable exception, must undoubtedly have allowed the felling of a large number of trees of the kind with which we are concerned. It is probable, however, that a large proportion of these were overmature.

13. Since 1932 planning legislation has concerned itself with the protection of woodlands, and the Planning Acts of 1947* empowered local planning authorities in the interests of amenity to make tree preservation orders prohibiting the felling of trees without their consent. We understand, however, that it has not hitherto been a general practice to make such orders in relation to hedgerow and farm trees, and in any event the number covered by orders is relatively small.

14. The Forestry Act, 1951, brought into force revised felling regulations more suited to peace-time needs; and although these still permit a landowner to fell up to 825 cubic feet in any one quarter of the year without a licence, the proportion of this amount which may be sold is limited to 150 cubic feet. It is unlikely that every owner will fell as much as 825 cubic feet in each quarter unless he needs the timber for use on his estate. Nevertheless, it is probable that the total number of trees felled each year under this exception is considerable.

15. A further important factor in the present state of hedgerow tree population is the comparatively recent change in practice in regard to the trimming of hedgerows. Until a few years ago it was the widespread practice, when hedges were laid or trimmed, to preserve suitable "tellers" and saplings so that they would grow up as replacements of the older trees. Of late, the trimming of hedges is largely carried out by mechanical hedgecutters, and we have reason to think that the undiscriminating cutting of all young growth, if not checked, will lead to a serious diminution in future yields.

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**Town and Country Planning Act*, 1947; *Town and Country Planning (Scotland) Act*, 1947. H.M.S.O.

16. It is thus clear that great demands have been made upon hedgerow and park timber in the past. There has been little control over its felling, and its replacement has been a matter of chance, depending upon the attitude of the individual landowner. With this in mind we have considered the available information about the volume, nature and size distribution of existing stocks of hedgerow and park timber and their importance in relation to the total stocks of standing timber in the country.

### EXISTING STOCKS OF STANDING TIMBER

17. Between 1947 and 1951 the Forestry Commission made a comprehensive survey of the woods and standing timber reserves in Great Britain. The survey was carried out in two main stages, each of which has been the subject of a special report, viz.:

Census of Woodlands of Five Acres and Over, 1947-1949*
Census of Hedgerow and Park Timber and Woods under Five Acres, 1951**

Chapter 2 of the latter Report, in particular, deals with hedgerow and park timber which, as has been mentioned in paragraph 7, coincides broadly with the types of trees and timber which are the subject of our enquiry. We have given this information full consideration, and have based conclusions on it. For easy reference, certain statistical data taken from Census Report No. 2 have been reproduced, and rearranged for our particular purpose, in Appendix B of this Report.

### SPECIES

18. Tables 6–7 of Census Report No. 2 show that the principal species of timber trees in hedgerows and parks in England and in Wales is oak, which accounts for just over 31 per cent of the total volume in each country. The relative importance of individual species is shown by the percentage figures in the following table:

| *Species* | *England* | *Wales* |
|---|---|---|
| Oak | 31·4 | 31·2 |
| Elm | 21·3 | 13·3 |
| Ash | 12·6 | 11·4 |
| Beech | 8·2 | 4·4 |
| Sycamore | 6·0 | 14·8 |
| Other broadleaved | 14·0 | 12·4 |
| Total broadleaved | 93·5 | 87·5 |
| Total conifer | 6·5 | 12·5 |
| | 100·0 | 100·0 |

### VOLUME†

19. The total volume of timber in hedges and parks amounted to nearly 807 million cubic feet, or 21 per cent of the total volume of standing timber in Great Britain.‡ Comparable figures for the individual countries were:

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*Forestry Commission Census Report No. 1. H.M.S.O.

**Forestry Commission Census Report No. 2. H.M.S.O.

†All volumes quoted in this chapter are in Hoppus measure, over bark.

‡See Census Report No. 2, Tables 35-38.

England—680·5 million cubic feet (29 per cent of the total in England)
Wales — 86·5 ,, ,, ,, (27 ,, ,, ,, ,, ,, ,, Wales)
Scotland— 39·7 ,, ,, ,, ( 4 ,, ,, ,, ,, ,, ,, Scotland)

In Scotland, stocks of hedgerow and park timber are relatively unimportant except in a few limited areas. In England there is considerable variation in the volume of hedgerow and park timber per square mile. In some areas, such as the Fens, it is negligible: whereas in parts of Southern England it is particularly large. Half the hedgerow timber in England lies in the twelve southern counties of Kent, Surrey, Sussex, Hampshire, Berkshire, Wiltshire, Gloucester, Hereford, Dorset, Somerset, Devon and Cornwall.

20. It has been suggested that the total volume of hedgerow and park timber in Great Britain would require about 400,000 acres of woodland suitable for growing hardwoods to accommodate it. Allowing for a proportion of garden and ornamental trees, and those which provide shelter, many of which will not be readily available for harvesting as timber, it seems fair to estimate that the amount of timber available in hedgerows and parks is approximately equal to the volume standing on 250,000–300,000 acres of reasonably fully stocked woodland. This figure may be compared with the total area in Great Britain of nearly 3½ million acres of woodland over five acres (Census Report No. 1), and with 178,000 acres of small woods between one and five acres (Census Report No. 2).

### NATURE OF TIMBER

21. Tables 35–38 of Census Report No. 2 compare the respective volumes of hardwood and softwood timber in the hedgerow and park category with the volumes in other categories, and with the grand total reserve, for Great Britain, England, Wales and Scotland, respectively. The significant figures, derived from these four tables, showing the relative importance of hedgerow and park timber, are given in Table 1 of Appendix B of this Report. These figures reveal that about 93 per cent of the total volume (806·7 million cubic feet) of hedgerow and park timber in Great Britain is hardwood, and only about 7 per cent softwood. Softwoods are thus comparatively rare in such situations. Moreover, according to Table 35 of Census Report No. 2 they represent only 5 per cent of the total growing stock of softwood timber in Britain, whereas hedgerow and park hardwoods represent 30 per cent of the total growing stock of hardwood timber.

22. Of the total volume of hedgerow and park hardwood timber (748·1 million cubic feet) only about 5 per cent (36·1 million cubic feet) is in Scotland. Moreover, in Scotland, the 36·1 million cubic feet of hedgerow and park hardwoods represent only 10 per cent of the total growing stock of hardwood timber in that country, and only about 1½ per cent of the total reserve of growing hardwood timber in Britain. In England and Wales, on the other hand, the figures show that hedgerow and park hardwoods represent as much as 33 per cent (712·0 out of 2,135·9 million cubic feet) of the total volume of hardwood timber growing in these two countries, while softwoods contribute less than 10 per cent (55·0 out of 568·1 million cubic feet).

23. These figures show in a striking way the large contribution to the general stock made by hedgerow and park hardwoods in England and Wales. Softwoods are relatively unimportant, and in Scotland the contribution made by each is small. The reasons for this distribution are no doubt natural ones, and it is unlikely either that more softwoods could be introduced with success or that hedgerow timber in Scotland of either kind could be brought up to a volume comparable

with that in England. They suggest rather that the main field for expansion, if other circumstances allow of it, is in the hardwoods of the southern half of England and Wales.

### SIZE

24. Census Report No. 2 classifies hedgerow and park timber volume by various size-classes, and Tables 6 and 7 of that Report show that in England and Wales 73 per cent of the total volume of hardwood timber lies in the largest size-class, i.e. trees with a quarter-girth measurement of 15 inches or more; whereas in the woods over five acres, we have been informed, this size-class accounts for slightly less than 50 per cent of the total volume. It follows that while the total volume of hedgerow and park hardwoods in England and Wales represents one-third of the *total* growing stock of hardwoods in these countries, if the *largest size-class only* were considered, it would be found that an even higher proportion (over 40 per cent) is contained in the hedgerow and park category. There are thus good grounds for thinking that hedgerow and park hardwood timber in England and Wales will remain for some years to come not only an important part of the national growing stock but also one of the chief sources of supply of the largest-sized hardwood saw timber.

### AGE DISTRIBUTION AND REPLACEMENT

25. The foregoing statistics have dealt only with the volume of timber at the time of the Census. Unless, however, there is in this timber a proper age distribution, annual production will vary. In particular, if the young growth is destroyed or not properly encouraged, the yield in future years must fall off and this cannot be corrected by control of felling alone. The question of age distribution is therefore of great importance. Here we have met the difficulty that the available statistics group trees into size-classes rather than ages, and the relation between these two systems of grouping is not a direct one, but depends upon the species of tree and the conditions under which it is grown. Any conclusions on the extent to which the age distribution of hedgerow and park timber is appropriate to the maintenance of the existing yield must therefore be rough and ready. Table No. 2 in Appendix B of this Report groups the numbers of hedgerow and park trees into four main size categories (i.e. saplings and three separate quarter-girth classes of timber trees). These statistics show that at the time of the Census, taking Great Britain as a whole, there was an approximate distribution of 2 : 1 : 1 : 1 in these four classes. An expert of repute has suggested to us that these ratios are insufficient to provide a continuous succession, and that a safer distribution would be 6 : 3 : 2 : 1. For lack of more precise information we limit ourselves to the opinion that in England the distribution is unfavourable and more trees in the younger classes are required. In Wales, however, the distribution is approximately 5·5 : 1·7 : 1·2 : 1 and the lack of balance is less marked.

26. Census Report No. 2 provides no information about recruitment to the sapling class by the growing up of young trees under 3 inches quarter-girth. Other evidence, however, suggests that there is a serious risk of recruitment being curtailed, because an increasing number of farmers and landowners do not protect young growth and in some places destroy it, particularly when using mechanical hedge-cutters ; and we have no evidence to show that much replanting is being done. There are, moreover, grounds for believing that in the case of trees in the timber class, felling is not confined to the largest size-class.

## INCREMENT AND RATE OF FELLING

27. In order to determine the changes that are taking place in the stock of growing hedgerow and park timber, it is necessary to consider not only the additions through increment, but also losses through fellings and decay. The annual increment of all broadleaved hedgerow and park timber in England and Wales is estimated in Census Report No. 2 at 10 million cubic feet. The volumes licensed for felling in this category during the last three years in England and Wales were :

| | *millions of cubic feet* |
|---|---|
| 1951-1952 .. .. .. | 8·2 |
| 1952-1953 .. .. .. | 6·6 |
| 1953-1954 .. .. .. | 5·2 |

To these figures must be added fellings permitted without licence, and losses through decay and other causes.

28. We have been unable to obtain a reliable estimate of the volume of unlicensed fellings : the total must be very considerable, however, in view of the large number of landowners involved, each of whom may fell up to 825 cubic feet per quarter without a licence, though of this amount he may not sell more than 150 cubic feet. Similarly, it has not been possible to arrive at a reliable estimate of other losses. It seems possible, however, that the increment is enough to balance the present annual reduction of stocks ; but, even so, the probable lack of adequate recruitment from the smaller size-classes referred to in paragraphs 25 and 26 must lead to a reduction of the stocks in the long run. Moreover, a reduction in the annual volume felled would not materially affect this, since reduced felling of the mature timber would lead eventually to larger losses through decay.

## DEMAND FOR TIMBER

29. In addition to the demand for large-sized hardwood timber mentioned in paragraph 24, well-grown hedgerow and park trees are a useful source of timber for special purposes. They can provide, for example, large-diameter butts of good quality, even if short in length, for quartering oak*, veneer oak, veneer sycamore and sycamore rollers ; and many of the home-grown timber sawmills are equipped to undertake conversion of the largest sized timber of this type. Farmers and landowners also continue to need timber for farm and estate use, much of which in some districts has been met from this source in the past.

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**Quartering oak* is oak large enough to yield substantial quantities of boards when sawn radially, or "on the quarter", to show the most effective figure.

## CHAPTER III

# *Influence of Hedgerow and Farm Trees on their Surroundings*

### INTRODUCTORY

30. Trees growing in small groups and clumps, in rows and avenues, and even scattered individually, have a great effect on the appearance and life of the countryside, quite apart from the contribution which they make to the supply of timber. Hedgerow and park trees provide shelter and shade; they affect the movement of water in the soil, extract nutriment from it and provide humus for it; they have some effect on the prevailing climate; and their roots may affect agricultural operations, buildings, drains and roads. Their presence may check erosion of land or their removal may induce it. They harbour wild life and shelter wild flowers, and they provide amenity. They yield easily accessible timber for local repairs, and may at times provide a useful reserve of capital for their owner. Whether they are a liability or an asset depends upon a balance of these factors, and it is the purpose of this chapter to discuss them generally, reserving for succeeding chapters a closer consideration of the way in which they apply to the particular circumstances of farms, roadsides or other places where trees grow or could be planted.

### SHELTER

31. Although land well provided with trees and hedgerows may often be sheltered largely or entirely from the effects of wind, opposite effects may occur, and gusts and down-draughts may be directed by trees on to particular areas of land, with bad results to crops or stock. The effect may be both general and local, certain areas of country or parts of fields being specially free from wind, or the reverse. Valuable technical evidence was given by the Ministry of Agriculture and the Meteorological Office jointly on the subject. Our attention was also drawn to numerous publications appearing in this and many other countries, in which results of work in this field have been recorded. A recent publication of the Ministry of Agriculture, Fisheries and Food* gives some information and advice on the correct siting and planting of shelter belts for the purpose of providing maximum protection and avoiding the effects of turbulence, and this is applicable to some extent to hedgerow trees.

32. Our enquiries suggest that greater knowledge of the sheltering effect of trees and hedgerows would often enable them to be used for protecting fields, pastures, buildings, playing fields and other situations without inducing adverse effects from eddying and turbulence. The subject is a highly technical one and the literature, which is scattered throughout learned journals in many languages, is apparently not co-ordinated. There appears to be further scope for study of the subject and we shall make a recommendation later.

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**Shelter Belts for Farmland*—Ministry of Agriculture Leaflet No. 15—Fixed Equipment of the Farm Series. H.M.S.O.

## SHADE

33. Protection from the direct rays of the sun is important to livestock on farms, especially in the southern parts of the country. The use of trees for shade in association with buildings, though common enough in practice, is sometimes attended with risk: but many farm buildings, working sheds and other similar places are sheltered from wind and sun by trees such as oaks or sycamores which are not likely to be blown on to them or to disturb their foundations.

34. The adverse effect of shade is most marked on arable crops, and when large branches overshadow a field, uneven ripening and reduction of yield may result. The growing of vegetables and fruit may be considerably retarded, particularly on land which has a north aspect. Grassland is not greatly affected, except immediately under dense trees such as beech or chestnut, or where it runs close to a thick plantation, and here the protein content of the grass may be diminished. The hedgerows themselves may be affected by shading and competition of dense trees growing through them, but many hedge trees, such as beech or holly, tolerate a high degree of shade, and are little injured by larger trees. Privet may compete successfully with trees, though it is useless against stock.

35. Drying of soil surfaces is generally retarded in the shade of trees, and this may be a disadvantage where road surfaces are involved, particularly where the road is also liable to receive drip from wet branches.

## EFFECTS ON SOIL

36. Deciduous trees, by extracting a great quantity of water from the soil and transpiring it through their leaves, increase the movement of water in the soil. They also absorb nutriment from it and return humus to it in the form of leaves. Of the hardwood trees which are of chief importance in hedgerows, the oak and sycamore are deep-rooting, drawing their water and nutriment at a deeper level than most other plants, including farm crops. Elm, ash, poplar and beech have a more extensive system of surface roots and may thus compete more directly with crops. The extent to which soil may be impoverished or unduly dried by such surface-rooting trees, and the conditions under which food production on neighbouring land may be affected, are apparently not fully understood. But the general belief that a large surface-rooting tree standing on the edge of an arable field will compete to some extent with crops within the normal range of its roots is probably well founded, even though the roots in the top spit may have been annually cut by the plough. This effect will be aggravated by shade and drip.

37. In other circumstances, however, where trees have been established on pit heaps, or other comparatively barren soil, the ultimate effect may be both to stabilize the soil and to make it capable of sustaining a wider range of plant life.

## CLIMATE

38. The climate of any place is dependent on its temperature during the year, its proneness to rain, frost, snow, fog or mist, its exposure to wind and many other physical factors, and on the extent to which these factors vary during the seasons. The sheltering effect of trees in reducing the force of the wind has already been referred to. Shade, by checking evaporation and radiation, tends in combination with shelter to minimise extremes of temperature and to increase the humidity of air near the surface.

39. In addition to these effects which operate over relatively large areas (macro-climatic) there are also small-scale changes (micro-climatic) in these physical characteristics, such as temperature or humidity in the immediate neighbourhood of trees.

40. Both large- and small-scale effects are of interest to agriculturists, horticulturists and many others who may cultivate trees. The technical evidence referred to in paragraph 32 showed that much work has been done on them. We understand also that research has been carried out recently by the Meteorological Office of the Air Ministry, with the co-operation of the Ministry of Agriculture and the Forestry Commission, in relation to the effect of shelter belts on hill farms in Wales. The current research programme of the Ministry of Agriculture includes investigation into the factors of shade, site and the establishment of such shelter belts. Further work is being carried out into the effect of the shelter of various types of hedge on field crops. We heard also of much work which has been done in Durham University on these lines. Since 1952, research has been carried out at Edinburgh University, with the aid of a grant from the Forestry Commission, into the effects of shelter belts on their immediate surroundings. We welcome these investigations and would like to see an extension of these programmes to include the smaller groups and rows of trees in lowland areas and also to include hedgerows and small farm spinneys. We think that the resulting information, insofar as it proves to be valuable, might be made available from time to time in a form which may be of practical assistance to those who are likely to benefit from it, and we shall make a recommendation later.

### EFFECTS OF ROOTS AND BRANCHES

41. Trees may in certain circumstances interfere with agricultural operations or damage roads and buildings by the presence of roots and branches. These effects will be noted here briefly for the sake of completeness. The extent to which they apply, and the ways in which they can be minimised in various circumstances, will be referred to more fully in subsequent chapters.

42. Trees are liable to spread their roots to a distance, from their trunks, which may considerably exceed their height. Surface roots, which are the chief obstruction to agricultural operations, may be kept in check by annual ploughing; but where land has not been ploughed for some time damage to implements may be caused during the first two years of cultivation. Roots may also prevent cultivation close to trees, so leading to waste of land, loss of production and spreading of weeds.

43. Tree roots are liable to damage walls and dry-stone dykes. Those of poplar and elm in particular are liable to block field drains : poplars, if allowed to grow into full size, are notably prone to affect buildings and road surfaces within reach of their roots, which extend relatively rapidly. Their propensity to extract quantities of water specially affects buildings and roads on clay soil.

44. Other effects which may be disadvantageous in some circumstances are that branches of trees overhanging arable land may interfere with harvesting : leaves, particularly those of such trees as chestnuts, may make roads slippery and block drains in the autumn : and trees growing in hedgerows increase to some extent the difficulty and cost of mechanical trimming and maintenance of hedges.

## EROSION

45. The presence of trees is a significant factor when considering possible soil erosion, whether by wind or water, and the experience of other countries has shown the serious consequences of denuding large tracts of countryside of trees. While we do not suggest that there is serious risk of large-scale erosion in Great Britain, we believe that there are areas where it is taking place ; and a few cases in various parts of the country have been cited of the top-soil from certain fields blowing or drifting away. We think, therefore, that erosion is now a sufficiently important risk on a number of individual fields and farms to merit the attention of the landowners and farmers concerned. In the Breckland area of East Anglia the stability of the soil and the present agricultural achievements in the area owe much to the planting of trees, and if these trees were not retained serious wind-erosion would result. This also applies to similar light land in other parts of Norfolk and Suffolk, and perhaps in the arable areas of East Anglia generally, and in some coastal areas of Scotland. Some Fenland farmers are becoming more conscious of this risk and contemplate remedial measures in the form of tree-planting. We are convinced that the presence of trees can do much to counteract the danger of erosion, not only in larger areas but also on a smaller scale around individual fields.

46. The correct siting of trees and plantations for this purpose is of the first importance, as is the type and density of the windbreak most suitable in any given circumstances ; yet the respective merits of belts, blocks or rows of trees as wind-breaks or "filters" are still in some doubt. Wherever soil erosion occurs or threatens, the landowner would be well advised to consider the beneficial effects of existing trees in the area before he removes them, and the desirability of undertaking further planting. In some cases it may be possible to achieve a mixture of age-classes so that perpetual shelter can be maintained by felling selected trees instead of periodical clear-felling and replanting.

## ANIMAL, BIRD AND PLANT LIFE

47. A number of witnesses have emphasised that scattered trees, as distinct from woods and forests, and especially those in hedgerows, constitute a favourable environment for the fauna and flora of the district. The fear has been expressed that if hedgerow trees were allowed to disappear, the wild birds which nest in them would be driven away. Hedgerow trees contribute to the balance of nature, in that they afford shelter to certain birds which, by destroying pests and other wild life, may on the whole be beneficial to agriculture. On the other hand, hedgerow trees encourage a number of birds which are detrimental to agriculture, and they may render the eradication of rabbits and other hedgerow pests more difficult. We realise that much of this evidence is based upon opinion rather than on scientific investigation ; and we have received other evidence suggesting that the destruction of hedgerow trees would not seriously affect wild bird life, provided that some alternative cover, such as spinneys or gardens, were available ; and, although the distribution of wild birds might be altered, it could not be said that bird life would be removed altogether. It has been suggested to us that although some birds do nest or perch in trees, hedges are more important to them. A greater threat to wild bird life may lie not in the removal of hedgerow trees, but in the disappearance of medium-height bush-cover such as thorn.

48. The wild flowers of Britain, like those of other countries, have their distinctive charm and character, and perhaps more than anything they teach us to appreciate

the beauty of nature. Their common habitat is the hedgerow, and if, owing to modern farming methods, the traditional hedge is to disappear, much of our heritage of wild flora will disappear with it. We think that the consequent loss to botanists, schools, rambling clubs and lovers of the countryside would be a calamity. We consider, therefore, that where hedgerow trees are felled, the hedge itself should be retained, unless it interferes with farming. Wild animal, bird and plant life would greatly benefit thereby, and the adjoining fields would gain from the shelter afforded.

### AMENITY

49. The character and beauty of much of the countryside is very largely dependent on the irregular and generous distribution of our trees in the form of small woods, copses and spinneys, along roads and hedgerows, and singly or in clumps in parks and on farms. Hedgerows and their trees especially have come to be accepted as a traditional and beautiful feature of our countryside ; the varying pattern of the fields is accentuated by hedgerow divisions with trees occurring at irregular intervals, giving a pleasing effect and a scale which is satisfying to the eye. It has been said that the grandeur of elm, the detail and variety of oak, beech and horse chestnut, dotted over many parts of the countryside, their colour varying with the changing seasons, and the wych elm, sycamore and ash which soften the bleaker districts further north, are virtually indispensable elements in the beauty of our land, and that without them the countryside would be bare, uninteresting and shadeless. In parts of Scotland, Wales, and the North of England, where mountains and hills give the landscape a more impressive character, the scene is enhanced not only by woods and forests, but by smaller groups of trees and hedgerows wherever they occur.

50. Trees may also be an important factor in the relationship of buildings to the landscape. Where there are no trees, buildings may seem stark and unprepossessing in form, especially those of little architectural merit. A group of trees, or even a single tree, may soften and enhance the appearance of such buildings, and bring about a more harmonious relationship with the adjacent countryside, both from the distant view and at close quarters.

51. A number of witnesses representing amenity interests have suggested that formally planted woods and forests, and even large spinneys, cannot successfully reproduce the present picture created by the natural effect of scattered trees. Others have conceded that in certain districts, for agricultural reasons, scattered trees might sometimes be replaced by small groups or clumps at intervals, provided that some irregularity both in the number of trees and in the spacing of the groups is retained.

52. The present uneven pattern of trees and woods has endowed much of the landscape with a charm peculiarly its own, and one not commonly found in other European countries ; for this reason it is particularly attractive to visitors from overseas, who find in our islands an individuality and freshness of rural scene not afforded by their own lands, no matter how well-wooded these may be. The economic value of this pictorial appeal to the outside world should not be lightly dismissed.

53. Although they have strongly emphasised the amenity value of trees, landscape architects do not recommend that they should invariably be planted in localities where none now grow : in parts of the Fens and in East Anglia, a scarcity of trees

is natural to the landscape, and this serves as a pleasing contrast to emphasise the beauty of neighbouring wooded areas ; in other places it may be that trees would conceal a pleasing view. Moreover, it is not normally advocated by amenity organisations that trees long past maturity should be retained purely for amenity's sake : although the plea is for replacement of these and any trees felled, such replacement may, if necessary, be on a different site. It would often be thought sufficient for the purposes of amenity if the total number of trees in an area were maintained, provided that some irregularity of pattern remains.

54. Before generalising about the part that hedgerow trees play, some classification of the main types of landscape in this country should first be attempted. There are many kinds of characteristic beauty, and their nature has been greatly influenced by natural and human factors. These influences have produced patterns sometimes temporary or unpleasing, sometimes permanent and beautiful : those that are permanent and beautiful have come to be regarded as characteristic, although they may no longer correspond to earlier patterns or indeed to present requirements. Other equally beautiful patterns may evolve, but if they are to be stable and "characteristic", they must all be related to the natural use and capacity of the surrounding land. In this view, amenity evolves from a compromise between pleasure to the eye and an appreciation of the right use of land : amenity follows not from doing what looks best, but from doing what is required in the way that looks best.

55. It is sufficient here to note that the characteristic pattern of pasture, thorn hedgerow and standard oak or elm, which is generally regarded as "typical English countryside", is largely confined to the lower ground of southern and central England, though it may be found in valleys and dales elsewhere (Fig. 1). Equally characteristic, though entirely different, are the arable plateaux on the limestone formations, where shelter and field boundaries are often provided by stone walls (Fig. 2) ; the dry and principally arable districts of the eastern counties ; the hilly stock-raising areas of Devon and parts of Wales, where grass banks, stone walls or stone-faced banks are more usual, and trees are grown on steep ground difficult to cultivate ; and upland hill grazings, where boundaries and fences are almost entirely of stone, and trees grow best in company as small woods and shelter belts.*

56. It has been generally suggested by witnesses representing amenity interests that these differences should be recognised and as far as possible preserved. Indeed, they have laid great emphasis on variety as an element of the landscape, not only as between one district and another, but in the pattern of each district itself. While they strongly favour a greater number of trees of the hedgerow kind in many places, they do not wish that the hedgerow pattern of the southern counties should be extended into places where the character of the landscape has long been different. Nor would they agree that the alteration of the pattern of the southern counties by the gradual collection of hedgerow trees into spinneys and woods would be a tolerable substitute, unless much of the existing irregularity and variety afforded by the succession of hedgerow with its casually occurring oak or elm were allowed to remain.

57. While those interested in amenity have laid great stress on the preservation of the hedgerow and tree pattern, where it is now characteristic, and on the growing of more hedgerow and park trees elsewhere, they have been sympathetic to

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*The Committee is indebted to the Royal Forestry Society of England and Wales for this classification.

opinions at variance with their own. They have realised that the cultivation of land may be adversely affected by hedges and hedgerow trees: but they think that, by proper treatment and the right choice of species, a balance can usually be struck, which will maintain the good appearance of the countryside without interfering with farming. They think that there is some unnecessary prejudice against trees and hedges, and that if those who dislike them were better informed, they would be more alive to their advantages and less fearful of their disadvantages.

58. We have noted in Chapter II reasons for thinking that hedgerow trees are being removed faster than they are being replaced. This impression is confirmed by observers, who see, especially in those parts of the country turning over to arable cultivation, some tendency towards the development of a more open pattern of countryside. But there is little visual evidence that rapid and wholesale destruction of hedgerow timber or of the hedges themselves is imminent, or that the appearance of the countryside is anywhere threatened with sudden change by the disappearance of trees and hedges. Indeed in parts of south-east England, more trees have been allowed to remain than the land should bear, to the detriment of agriculture; a judicious reduction in the present stocking, with suitable replacement and more expert attention to management, would improve the productivity of the land without any loss of amenity.

59. In the course of our visits to different parts of England, Scotland and Wales, we have confirmed, by our own impressions, the evidence referred to in the preceding paragraphs. It would be misleading to formulate any precise principles relating to the preservation of amenity, since they could not safely be applied without full consideration of other factors. But certain points of view may usefully be noted as relevant to the solution of problems in which amenity is involved. These are now briefly mentioned:

(*a*) There are many different types of landscape pattern. Where the pattern has attained stability the amenity to be sought should be that best afforded by this pattern, subject to the requirements of rural economy.

(*b*) Within each type of landscape pattern there is generally room for wide variation in distribution of trees without fundamentally altering its character. The uplands could absorb a large population of trees without their characteristic bareness being affected: in the woodland and pasture country of the southern counties hedgerow trees and belts of trees could often be thinned, with advantage both to amenity and agriculture, and these trees could often be replaced in odd corners (Fig. 3).

(*c*) The maintenance of amenity depends on the timely felling and replacement of trees. An important element in amenity is variety and irregularity. Both are served by due attention to cultivation for succession.

(*d*) The standard of maintenance of hedgerow trees is often very poor. Amenity, and the timber value of the trees themselves, could often be greatly improved by pruning and thinning.

(*e*) There is great scope for the use of trees in association with all kinds of buildings and other development, to set off the appearance of those which are well-designed or to soften the effect of those which would otherwise offend the eye. Great improvements in appearance may often be attained by small means.

Although propositions such as these are not valid in all circumstances, they may at least give some definite form to the nature and needs of amenity, and suggest ways whereby these may be reconciled with agricultural and other interests.

### SOURCE OF TIMBER

60. Farm timber can do much to meet the demands for repairs and renewals to fences, gates and buildings, and can also enable the owner to build up a financial reserve against future capital expenditure. Such trees, if properly grown and tended, and felled before they become over-mature, are readily marketable, provided that they are undamaged by nails put in to secure wire fencing (Fig. 11). Isolated trees or those grown in rows or small groups are specially useful in providing large-diameter logs. If properly managed they can yield a regular revenue, and on certain soils and aspects the faster-growing trees can be planted and felled within the lifetime of the planter.

### TREES AS A CROP

61. In the earlier stages of the long life of a tree its effects on its surroundings may be of little consequence. It is only when it is approaching its full stature that it becomes a prominent feature of the landscape and makes its presence felt. There is possibly some unnecessary prejudice in the minds of those who look on trees as large and permanent objects which exert for an indefinite period their maximum influence on their surroundings. This view tends to be misleading.

62. In the case of cultivation in hedgerows, trees may be allowed to grow through from tellers* or suckers†, or they may even be planted. Close cultivation with subsequent thinning is not necessary, although it may sometimes be desirable. In any event, trees may be allowed to remain until they are mature or until their effect on neighbouring land or other considerations make their removal advisable. Under these conditions, few adverse effects are to be expected from slow-growing hardwoods in the first twenty or thirty years of their life: if it is then necessary to fell them before they are mature, they may still yield some useful small timber. They may require periodical pruning and protection in their early life to a greater degree than plantation-grown trees (Fig. 5); and if it is desired to maintain a steady output of timber from hedgerow trees on a farm or estate it is necessary to see that the age distribution of the trees, as a whole, is appropriate to ensure it (Fig. 6). By planned treatment of this kind it may be possible to maintain a good stock of hedgerow trees and a steady supply of timber without adverse effects on the productivity of nearby land: and if a mistake has been made the troublesome trees may be felled.

63. Small groups of trees or windbreaks, which we have taken as within our terms of reference, may sometimes be maintained under forestry conditions, either as a plantation established from young trees all planted at the same time, or as a group containing trees of various ages. If a small group of slow-growing hardwoods is established it may be expected to provide some shelter and some smaller timber from thinnings during the period from, say, 15 to 40 years after planting, without causing any other very widespread effects on neighbouring land. From this time onwards, the spread of roots, competition for moisture and nutriment, and increased effect of shade may raise problems which necessitate clear felling. A

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*A *teller* is a young tree, usually a natural seedling, suitable for growing on, to form a timber stem.

†A *sucker* is a young tree springing from the roots of an older one.

group containing trees of all ages, though thinned periodically by the removal of the mature generation, will exert a fairly constant influence on its surroundings. Where fast-growing trees, such as poplars, are grown either in rows or in groups, their effect may make itself felt much earlier: these, however, are sometimes felled for timber before they attain their maximum size.

## CONCLUSION

64. In addition to the foregoing considerations, we are bound to draw attention to the fact that each generation enjoying the beauty and benefit of trees, whether on the purely local scale of individual farms and estates, or on the larger scale of counties or the country as a whole, is reaping the reward of the foresight, skill and capital investment of their predecessors. If this heritage is not to be lost, each generation must replace what it has consumed, and regard it as a duty to leave an adequate stock of growing trees for the enjoyment and benefit of its successors ; yet, so far as hedgerow and farm timber is concerned, there is evidence of a marked tendency in recent years for this responsibility to be ignored. As a matter of general principle, we hold strongly to the view that existing stocks of trees ought to be maintained and, where practicable, increased. We feel, therefore, that all persons and authorities concerned with land ownership or management should be encouraged to co-operate to this end, and to accept for the common good such measures as may be expedient to reconcile the various economic, utilitarian and aesthetic interests involved.

# CHAPTER IV

# *Agricultural Considerations*

## ATTITUDE OF LANDOWNERS AND FARMERS

65. In medieval times most agricultural land was unenclosed and grazed in common, but as early as the 13th century there were statutes authorising enclosure of land. This increased steadily thereafter, and reached its peak in the 18th century. It has been calculated that between 1760 and 1815 no less than about six million acres were enclosed.* Enclosures were usually accompanied by the introduction of hedgerows, and later by the planting and tending of trees in them. In the 18th and 19th centuries landowners were more interested in planting trees for amenity and timber production, and were less concerned with food production and immediate profit. In 1914 nearly 90 per cent of agricultural land was farmed on the landlord and tenant system, and the landlords were able in most cases to reserve the timber to themselves, and to encourage its growth notwithstanding any disadvantages to the tenant farmer.

66. In the 20th century great changes have occurred in the main objectives and methods of agriculture. Greater emphasis has been placed, especially during and immediately after the two World Wars, on arable farming, the maintenance of a high tillage area, and the encouragement of livestock rearing; and the practice of ley-farming has become more widespread. The shortage of man-power, the mechanisation of farm operations, and the increasing adoption of modern methods of agriculture, involving "taking the plough round the farm", have all tended to draw attention to the disadvantages of small fields with numerous hedgerows, and to emphasise the objections to large trees growing on or close to land under cultivation.

67. Simultaneously with the adoption of new methods there has been, since 1914, a change in the pattern of land tenure. Many estates have been broken up, and the area of agricultural land in owner-occupation has greatly increased. These changes, together with the drive for maximum food production, the increasing importance of agriculture, and the introduction of protective legislation, have all contributed to create a new outlook on the part of farmers, whose prime consideration, especially in arable and ley-farming districts, is maximum efficiency at minimum cost. The modern farmer is increasingly concerned with the commercial and competitive aspects of the industry, and tends to look askance at anything which in his view interferes with production. Working capital, especially in recent years, has become more important to the farmer than it was previously; and, for the owner-occupier at least, the sale of timber growing on the farm has been one means of raising quickly some of the necessary funds to pay for land, improve buildings and farm equipment, and expand production. Moreover, many landlords, faced with increasing cost of estate management, high taxation and death duties, have been forced to raise money by selling hedgerow and other timber.

68. The consensus of opinion amongst farmers appears to be that the planting and tending of hedgerow trees is often contrary to good agriculture practice,

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*Lord Ernle—*English Farming—Past and Present.* Fourth edition, page 163.

especially on arable land. This attitude is understandable, and it is right that the main concern of farmers should be with the production of food. While farmers in their attitude to farm timber, and to hedgerow timber in particular, are not always fully informed, there is no doubt that trees can often be an impediment to agriculture; and we recognise the strength of the view that there can be no justification at the present time for planting and maintaining trees which would prevent the best use of land for food production. But timber which can be produced without such ill-effects is of value to the owner and to the nation, and it is important to consider the circumstances under which this may be possible.

### TREES AND FARMING PRACTICE

69. The main effects of hedgerow and farm trees on their surroundings have been described in general terms in Chapter III. The extent to which these considerations apply to farmland varies with the nature of the land and the system of farming practised, and for the purpose of considering typical cases we have divided farms into four main classes as follows:

(*a*) Mainly arable (including market gardening);
(*b*) Mainly grassland;
(*c*) Farms where alternate husbandry is practised (ley-farming);
(*d*) Rough and upland grazing.

The advantages and disadvantages of hedgerow and farm timber on farms in these four categories, and the special considerations which apply to owner-occupiers, landlords and tenants, are considered in greater detail in the following paragraphs.

### MAINLY ARABLE

70. Opposition to the growing of hedgerow trees on farmland is strongest in arable areas, where many of the factors mentioned in Chapter III may make themselves specially felt. It must be remembered, however, that even within the districts where arable farming predominates there are variations of land and soil. There are windswept coastal districts and more sheltered inland areas; some with heavy soil and others with light soil liable to wind erosion; and certain districts have a higher rainfall than others. Even on arable farms the attitude of the farmer to hedgerow and farm timber must be governed by the special needs and circumstances of his own land and district. We are in no doubt, however, that the disadvantages of hedgerow trees are mostly to be felt round arable fields, and sufficiently so in many instances as to outweigh their advantages.

71. The shading of crops is reduced when hedgerows run north and south or on the northern side of a field. It is also reduced by suitable pruning of the trees themselves, which at the same time may remove obstacles to the passage of mechanical equipment and improve the quality of the timber. The spreading of surface roots can be controlled by periodical ploughing. The effect of turbulence in the laying of crops may be serious, if trees stand in the quarter from which the strong winds blow, though it may be reduced by thinning. On the other hand, hedgerow trees may afford valuable shelter in arable districts where, owing to exposure to wind and the lightness of the soil, protection is particularly desirable, and the effect of trees in reducing extremes of temperatures may on occasion enable earlier crops to be taken. It is thus by no means a foregone conclusion that the disadvantages of hedgerow trees on arable land will always outweigh their advantages, and we have ourselves seen during our visits that in certain circumstances

it is possible for such trees, properly sited and maintained, to be grown on the borders of arable fields without apparent detriment to crops.

72. While, therefore, a desire to remove hedgerow trees from close proximity to cultivated land will often be justified, the taking of measures such as those indicated above may do much to reduce ill-effects and may in some circumstances remove them entirely. There are, moreover, even on predominantly arable farms, places where good farm timber could be grown sufficiently far away from the cultivated fields that no interference with crops or their harvesting could result. Small waste areas at the corners of fields, hollows or dingles, steep banks or broken land near the farm buildings, could often be used for growing trees which would provide timber, shelter and amenity without harm to agriculture (Fig. 4). We recommend that this kind of planting should be widely carried out, especially in the Fens, where trees in the hedgerows might aggravate the peculiar drainage problems, and in other flat arable country, where small spinneys and windbreaks would do much to avoid "prairies" following the clearance of hedgerows and the enlargement of arable fields.

### MAINLY GRASSLAND

73. Because of the greater emphasis on arable farming, and the increasing prevalence of the system of alternate husbandry under which all suitable fields are put through rotations of crops that include a period in grass (ley of two years and upwards), there is now much less permanent pasture. Nevertheless, in the aggregate, there is still a large acreage of comparatively low-lying land, as distinct from upland grazings and hill farms, devoted mainly to permanent pasture in conjunction with dairy farming and the rearing of livestock for meat production. Examples are to be found in central and southern England, in the valleys of the Thames and Severn, and other smaller rivers flowing into the English Channel; on the small farms characteristic of the Devon peninsula and parts of Wales; and in some parts of the dairying districts of Scotland. Moreover, apart from these predominantly pasture and stock-rearing districts, it is probable that on most farms there is land where steep slopes or unsuitable soil preclude cultivation, and which therefore tends to be permanently under grass.

74. The two main benefits which trees provide for stock are shade and shelter, although the relative value of these may vary according to location, degree of exposure, and climate. For example, Scottish witnesses have suggested that the advantage of shelter from cold winds and driving rain or snow in winter is much more important than is shade from the summer sun which, in the North, is seldom sufficiently hot to be troublesome to stock. Although it has been suggested that the configuration of the land may afford some measure of shade on upland farms in Wales, Devon or north-west England, the shade afforded by trees is beneficial and necessary on flatter land or open uplands, such as Salisbury Plain or the Cotswold Hills. Trees benefit livestock by providing shade in which beasts can find refuge from flies in summer, and we have been told that even in the comparatively mild climate of Devon, livestock lacking any other form of shade will seek it in the scrub. Agriculturists have pointed out the possibility of animals being maintained in the open for two or three weeks longer each year where there are trees to provide shelter. This is a matter which we think ought to be the subject of further research.

75. On grassland farms a reasonable amount of hedgerow and park timber is an asset, and often a necessity, and accordingly existing stocks should not be removed

prematurely or without careful consideration. Moreover, where current agricultural practice indicates that there is unlikely to be any large-scale conversion of existing grassland to arable farming, we think that replacement is to be encouraged. Whether this should be done in hedgerows or elsewhere is a matter for decision by the individual farmer concerned. There is, however, much to be said for taking advantage of natural regeneration wherever it occurs, and for preserving and protecting suckers or tellers which grow up in hedges, especially on farms where the only alternative is to plant on good grassland. On the other hand, it may be preferable to replant a number of trees either individually as park trees or in small spinneys, since we think that the initial cost of protection is justifiable in view of the eventual advantages to the land and stock, to the amenities of the farm and the district, and the ultimate yield of useful timber.

### ALTERNATE HUSBANDRY

76. We need not enlarge on the fact that with alternate husbandry every possible piece of agricultural land is at some stage tilled and planted with crops. Whilst the period of rotation may vary on those farms where ley-farming is the rule, there may be little land which can be regarded as permanent grassland, and few fields which will not at some stage be ploughed. Our remarks in regard to arable land may therefore be taken as applying broadly to land being farmed under a system of alternate husbandry. Even on farms of this type, however, there may be groups of fields which are mainly permanent grass or temporary leys of long duration and likely to remain so, and which consequently may be well served by trees growing in hedgerows. In such cases, our views on hedgerow and farm timber in relation to grassland will apply.

### UPLAND AND ROUGH GRAZING LAND

77. Under the exposed conditions common to the hill farms of Scotland and Wales, and to upland grazing areas generally, hedgerow trees often do not grow well owing to the unsuitable climate and soil. Upland grazings are often better served by the planting of coniferous shelter belts or windbreaks ; but there may also be suitable opportunities for protecting farmsteads and wintering fields with clumps or rows of hardwoods such as sycamore, or mixed groups of hardwoods and conifers. On some upland farms, shelter provided by trees noticeably advances the growth of grass, which is from two to three weeks earlier and more vigorous than on other similarly situated farms lacking such shelter. It would be outside the scope of our terms of reference to enter into detailed consideration of the advantages of hill shelter belts ; but there is great need for more planting of this kind, and we think that it would do much to improve the quality of grazings and the stock-carrying capacity of the land, besides improving its appearance and providing eventually an additional source of timber. We recommend that more should be done to bring these advantages to the notice of landowners and farmers, and to provide expert advice and practical assistance locally for those who acknowledge the benefits but do not know how to proceed.

### LAND TENURE

78. It is convenient to consider in this chapter a factor in the growing of hedgerow trees which is particularly in evidence under agricultural conditions, where trees and crops may compete, though it often applies elsewhere. Property in timber trees is customarily reserved to the landlord. Where he is also the occupier of the land, he is in a position to resolve conflicts of interests for himself. Where,

however, the land is occupied by a tenant, possible conflicts may arise which cannot be resolved, and it may well be that in the past there has been a tendency to avoid them by shelving the question altogether. It is certainly clear that the cultivation of hedgerow and farm timber is liable to be beset with more difficulties if it is dependent on a somewhat indefinite sharing of responsibility between landlord and tenant, neither of whom may feel great enthusiasm to overcome the practical difficulties. For this reason we have thought it advisable to mention the considerations that arise in either form of land tenure.

### OWNER-OCCUPIERS

79. In 1950 about 39 per cent of farmers in England and Wales were owner-occupiers, and their farms accounted for about 38 per cent of the total acreage of crops and grass, excluding rough grazings. In Scotland in the same year about 36 per cent of the land under crops or grass was similarly farmed and about 30 per cent of all holdings were owner-occupied. The general tendency for such farms to increase in number and in total area continues, although the change is now more gradual than it was after the first World War. Owner-occupiers are in a specially favourable position to combine farming with the growing of timber. Within the limitations imposed by licensing, and occasionally by a Tree Preservation Order, they are free to solve any conflict of interests in a way that seems best to themselves.

### LANDLORDS AND TENANTS

80. Where a farm is let to a tenant, however, the position is different. The respective rights of landlord and tenant vary according to whether the trees are "timber" or not. There is no precise definition of timber trees, and what is timber varies by custom in different parts of the country. All timber trees pass as part of the demised premises unless they are excepted in the tenancy agreement. Generally timber and timber-like trees and woods are excluded from tenancies, and property in them when severed from the land is retained by the landlord. It is thus the latter who is generally regarded as responsible for maintenance and replacement, and he can plant a spinney or windbreak if he resumes possession of the land to be planted, or obtains the tenant's consent. Unless the tenancy agreement specifies otherwise, the tenant has no property in the timber, no positive duty to maintain it, and no right to fell or prune it (except insofar as the trees interfere with the purpose for which the premises were demised). In the event of the tenant in such cases felling or replanting, the timber belongs to the landlord. The position is clearly open to the criticism that in present circumstances there is little incentive for the tenant to take the initiative. It follows that unless the landlord maintains the trees himself, in most cases proper care and protection will not be given, the quality of the timber will suffer, and the disadvantages to agriculture may be aggravated. Moreover, the prospect of securing replacement in the hedgerows, parks or elsewhere is remote, unless the landlord can be persuaded to do it or the tenant can be given some incentive to co-operate. This is an unsatisfactory state of affairs, especially as nearly two-thirds of farm land under crops and grass is managed on the landlord and tenant system, and we have therefore applied ourselves to suggesting possible remedies.

81. In a matter depending so greatly on the co-operation of landlord and tenant in the ordinary business of running a farm, we have little doubt that the ideal to be sought is agreement on policy between them, covering all aspects of tree

cultivation that are likely to emerge. Responsibility should be fixed for maintaining, thinning and pruning existing trees and hedgerows ; provision should be made for avoiding damage to hedges by careless felling, and injury to crops by haulage across fields at unsuitable times ; and arrangements should be made by owners in co-operation with tenants for embodying such provisions in contracts with timber merchants. An understanding should be arrived at in regard to future planting, division of labour between landlord and tenant, and to what payments or perquisites of timber, firewood or brushwood should be allowed. We do not think it practicable or necessary to go into further detail. It should be sufficient to urge that a policy should be formulated, and that a commonsense agreement should be drawn up as to participation in the effort and in its rewards. We are aware that this is sometimes the practice now among landlords and tenants who are interested in the subject, and we think the practice should be followed more widely and regarded as a matter to be considered by all concerned in farm management.

82. Cases may arise, however, where agreement cannot be reached, and tenants who are interested in the replacement of hedgerow and farm trees are unable to secure the co-operation of landlords, and we have thought it desirable to seek opinion as to how this difficulty might be overcome. Witnesses generally agree that the ownership of farm timber should remain vested in the landlord as the person having the greatest degree of security in relation to the farm, and we concur in this view. Some witnesses have suggested that the tenant should have the right to plant trees with the consent of the landlord, others that this right should be accompanied by the right of appeal to the Minister in the event of refusal by the landlord. Either solution gives rise to the question of what compensation would be proper at the expiration of the tenancy.

83. After careful consideration of the views expressed to us, we have come to the conclusion that it would be right to provide for the planting of trees by a tenant with the consent of the landlord, and with the right of appeal to the Minister in the event of refusal. The provisions of the Agricultural Holdings Acts appear to provide a means by which this could be brought about, and this method has the additional advantage that it provides a means of regulating the question of compensation. We shall make a recommendation in Chapter VII as to the way in which these Acts should be used for the purpose.

84. It is of interest to note that, since the passing of the Crofters Holdings (Scotland) Act of 1886, "Planting Trees" has been an item in the Schedule of permanent improvements which can be carried out by small landholders in the seven crofting counties of Scotland. Claims in respect of trees as permanent improvements have been comparatively few in number and small in value, and have evidently been in respect of amenity or shelter or both, probably a few trees in the neighbourhood of house or garden. There is nothing to suggest that trees planted by a holder cannot be made use of by him in any way he likes. While he would, of course, be entitled to their agricultural or amenity value at waygoing, it does not appear that he could claim anything for their value as timber.

### NEED FOR FINANCIAL ASSISTANCE

85. A further obstacle to the growing of hedgerow timber is the relatively high cost of protection and maintenance, as compared with the growing of trees in plantations. Grants available under schemes sponsored by the Forestry Commission are seldom applicable to the circumstances of hedgerow trees, and we

think that assistance on similar lines should be made available. We make recommendations on this matter in Chapter VII.

### EDUCATION

86. Our enquiries have led us to think that, with notable exceptions, many farmers and landowners are not well informed on the subject of trees, and tend to regard timber cultivation as alien to their proper activities. Lack of knowledge, we think, leads sometimes to undiscriminating prejudice which may deprive the owner and the nation of advantage. We have endeavoured to indicate some of the considerations for and against such trees, and we hope that this, together with the many scientific reports which have been made in this field, will form a basis for education and publicity. We make appropriate recommendations later in the Report, as to the way in which these matters should be brought to public attention.

### TECHNICAL ADVICE AND ASSISTANCE

87. Many landowners and farmers also need technical advice and skilled assistance in the planting and tending of hedgerow and farm timber, and we also make recommendations on these matters in Chapter VII. In this connection, we wish to draw attention to the fact that a number of co-operative forestry societies have been formed in various parts of the country, with the object of assisting private woodland owners. These societies employ technically qualified staff; and some of them have mobile labour squads trained, equipped and organised to carry out planting and other forestry operations on contract for their members. The services may include arranging for the conversion of timber for the member's own use, and we think this would be of particular value to farmers and small estate owners, who do not normally possess the necessary equipment for sawing and converting large timber of the kind produced by hedgerow and other farm trees, and for whom timber-production is at best a side-line. Societies are also able to advise their members on the marketing of timber, either before or after felling, and, as a result of buying in bulk, to supply young trees, wire netting and fencing material, tools and other requisites to their members on favourable terms. Some provide special plant and equipment on hire.

## CHAPTER V

# *Roadside Trees*

### INTRODUCTORY

88. The term "roadside trees" is used to cover all trees which grow on or along a road or highway, whether on the verge or central reservation, on traffic roundabouts, or in or just over the hedge or fence which separates the highway from adjoining land. On this definition some roadside trees may affect agriculture, but many do not. In the case of trees growing between the road and farmland, the agricultural considerations described in the preceding chapter will apply according to the nature of the land and the system of farming which is followed: whereas in the case of trees growing in central reservations and roundabouts, or on verges which do not border on farmland, the question of compatibility with agriculture does not arise. There are, however, a number of special considerations which apply to roadside trees but not to hedgerow and farm trees generally.

89. Roadside trees are a characteristic feature of many highways in this country. In some places their presence is fortuitous; but in others landowners or highway authorities have grown them deliberately, either by planting young trees, or by preserving the natural growth of tellers in the hedgerows. There are, however, a number of practical difficulties in the way of growing and tending roadside trees. In a small country like Britain, the space which is available for the purpose is often limited, and there is increasing objection to encroachment on agricultural land. The need for underground services and overhead wires, and necessary allowances for future road widening, have to be taken into account. In some places the nature of the soil may be unsuitable, especially if the topsoil has been removed in constructing the road. There is always the difficulty of cost and, frequently, lack of knowledge and skilled labour to undertake the work of planting and maintenance. Choice of the most suitable species is often difficult; there are special legal considerations; and there is the paramount consideration of road safety.

### AMENITY CONSIDERATIONS

90. Special considerations of amenity apply particularly to trunk roads or other large roads which by their nature form a conspicuous feature of the countryside. Trees and shrubs growing about such roads are capable of producing pleasing effects, and may convert what would otherwise be an uninteresting or discordant feature into an attractive one, especially if they serve to mask or break up the line of the highway. Where space allows, it is desirable to provide so far as possible for a continuous succession in whatever planting effect is aimed at. Public opinion is sometimes opposed to the felling of mature trees, even when they may be considered dangerous; but provision for succession, apart from its necessity if a permanent effect is to be achieved, removes much of the objection to whatever pruning or felling may be required by good arboriculture.

91. We commend to local authorities the desirability of growing more roadside trees wherever it is suitable to do so, whether by their own efforts, or by co-ordinating the voluntary efforts of landowners and others who may be willing to contribute to the work of preserving the amenities. We emphasise, however, that the

use of trees for the dual purpose of enhancing the amenity of roads and increasing the reserve of timber requires the combined skill and advice of the landscape architect, the road engineer and the forester. Without these, the best results may not be achieved.

### TIMBER FROM ROADSIDE TREES

92. We do not agree with the view expressed by some witnesses that most forest trees are unsuitable for roadside planting. On the contrary, we believe that, wherever there is a combination of suitable soil conditions with sufficient space, large forest trees might be grown, and that, if they are well sited and given proper care and maintenance, such trees can make a substantial contribution to the reserves of standing timber outside the main woods and forests (Fig. 7). Where the space available is not enough to warrant the growing of really large trees, smaller types of timber-producing trees, such as birch and cherry, might be planted. Alternatively, steps could be taken to fell the large-growing species before they reach their full stature and become a nuisance or a danger, taking care to provide an adequate supply of younger trees to replace the older ones. Provided that they are felled before they become over-mature, roadside trees could become a more fruitful source of useful timber in the future, although the difficulty of felling large trees along a public highway without interfering with traffic must always be taken into account.

### SPECIES

93. There can be no doubt that wherever there is adequate space for their full development, large trees such as oak, elm and beech are to be preferred if amenity is to be combined with the object of growing timber. Sycamore has been suggested as a particularly suitable species for roadside planting in the north. The common elm, which has a particular beauty, is now suspect as a roadside tree because of the risk of elm disease and of liability for damage which may be caused by the tree falling or shedding its branches. Possible substitutes might be the wych, Cornish and Jersey elms.

94. Controversy surrounds the use of poplar for roadside planting. It is often contended that the planting of poplars in formal avenues as seen on the Continent is unsuitable for this country. On the other hand the opinion of various experts on amenity, road safety and forestry, and of some agriculturists, is that poplar, even when planted in avenues, is on suitable sites acceptable as a roadside tree, and we share this view.

### ROAD SAFETY

95. The question of roadside tree-planting must inevitably include consideration for the safety of road users. We are assured, however, by the national motoring associations, that the planting of trees along roads is welcomed, provided that vision of drivers is not obscured, especially at road junctions, and that safety is treated as a paramount consideration. In particular we were told that if large-growing species are planted they should be placed well back from the road. This applies especially to trees such as plane, horse chestnut and sycamore which, although they are among the most beautiful, have large leaves which cause a serious risk of skidding when they fall on road surfaces in autumn, and to poplars where their roots may cause damage to the road itself.

96. Our attention has also been drawn to the value of the shelter afforded by trees to road users where the way lies over land exposed to wind, rain or drifting snow. While we believe that there are many places where exposed roads could be improved by the planting of sheltering trees, we must add that special considerations are involved in planting trees for shelter, and it is usually advisable to obtain expert technical advice, especially where the trees are intended to serve as snowbreaks. We have considered the effect of roadside trees when there is fog or ice on the road, but it appears that while sometimes their presence may help to improve such conditions, in some places they may have the opposite effect.

### ROAD CONSTRUCTION AND MAINTENANCE

97. When the line for a new road is being chosen, every effort should be made to retain existing hedgerow trees and spinneys as features of the highway. Provision should also be made so far as possible for planting trees after the road is constructed, by leaving enough space and preserving the topsoil. We recognise that good agricultural land should not be sacrificed, but in those places where a road is built over unproductive land the highway authority would be justified in providing wider verges for the purpose of growing forest trees. Where it is proposed to grow trees on a bend, it is preferable to plant on the outer rather than on the inner curve, in order to facilitate future road-widening and to leave visibility unimpaired.

98. Trees have, however, some adverse effects on road maintenance. On clay soils their roots tend to dry out the sub-soil and so disturb road foundations. The roots of some species, especially poplar and elm, may damage drains or other conduits under the road or its verges. The drip of water from overhanging trees may eventually prove harmful to the road surface. A similar effect is produced where trees on the south side of the road, or a close-canopy avenue, screen the road from the sun. The extent to which trees affect the road surface, and thus the cost of road maintenance, varies from place to place, being dependent not only on the nature of the soil and the road itself, but also on the degree of exposure and the position of the trees in relation to the road and the prevailing wind. Choice of site, species and spacing are important, and planting should not be done without technical advice.

### LEGAL CONSIDERATIONS

99. An important consideration affecting roadside trees and the possibility of securing more planting and better tending of them in future, is the question of who owns the trees, who is legally responsible for their maintenance, and who is liable if they fall on to or otherwise obstruct the highway, or if they cause damage or injury. Doubts on this matter may lead to unnecessary or premature felling of existing roadside trees, and fear of unknown liabilities may militate against the replacement or new planting which we would like to see taking place.

100. Trees are usually the property of the owner of the land on which they are growing. In the case of trees within the limits of the highway it is a matter of enquiry in each case as to who owns the land. If the land is owned by the highway authority, the authority would normally own the trees. Otherwise the presumption is that the ground over which a highway runs, and any trees growing on it, are the property of the owner of the adjoining land. Where land has merely been dedicated for use as a highway this does not in itself transfer ownership of either the land or any trees growing on it to the highway authority.

101. There are special cases, however, when the ownership of trees on the highway may be in doubt; for example, where a highway authority, in the exercise of its powers under Section 1 of the Roads Improvement Act, 1925, has planted trees on land which is merely dedicated for use as a highway. We have been told of one County Council which has accepted liability for maintenance and third party risks in respect of such trees. This Council expects to enjoy the right not only to fell the trees but also to receive the proceeds from selling the timber. This view does not seem to have been tested in the Courts, and it would be helpful if the law were clarified on this point.

102. If roadside trees are privately owned, the owner or the occupier of the land on which they are growing may be liable if the trees constitute a nuisance or a danger. In one leading case, however, in which a large roadside tree had fallen and injured passers-by, an action was brought by the injured persons against the occupiers for negligence or nuisance. The House of Lords, on appeal by the injured persons, gave final judgment in favour of the occupiers, holding that:

> "Inasmuch as the tree was apparently sound and healthy and the evidence did not establish that inspection by an expert would have revealed that it was dangerous, the occupiers were not liable in either negligence or nuisance."*

If a tree growing on adjoining land falls across the highway, and there was no negligence on the part of the occupier of the land, in that he had no reason to think it was dangerous, he would not be liable for any accident caused by the obstruction.† It is, of course, possible to insure against liabilities which may fall upon the owner or occupier in relation to trees, and the premiums are not high.

103. Highway authorities have some powers which enable them to enforce the cutting or trimming of trees that overhang the highway to the detriment of traffic, but the nature and extent of these powers are not entirely clear. They are to some extent related to powers in respect of trimming roadside hedges, but the law is not the same throughout England and Wales. In Scotland, highway authorities also have statutory powers in relation to land adjoining a highway, with particular reference to hedges and trees; but these differ in some respects from the powers in force in England and Wales. It was stated in the House of Commons on 3rd February, 1954, that the possibility of amending legislation was being considered.‡ We recommend that the powers of highway authorities in this respect should be revised to meet present-day conditions and made uniform throughout Great Britain.

## TENDING OF ROADSIDE TREES

104. If roadside trees are to be maintained in good condition, and not become a nuisance or a danger to traffic, they must be subjected to regular inspection and attention, with appropriate pruning and trimming. Although this responsibility lies on the owner, we think that more could be done by highway authorities, by suitable arrangements with the owners, for them to attend to privately-owned trees. We have been told of one County Council which has arranged for its highway staff to inspect not only their own trees but privately-owned trees growing adjacent to the highway and to draw the attention of the owners to any work that appears to be necessary. We think that this practice might well be adopted

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*Caminer *v.* Northern and London Investment Trust Ltd. (1951). A.C. 88.

†Hudson *v.* Bray (1917). 1 K.B. 520.

‡Hansard—House of Commons Debates, 3rd February, 1954. Cols. 336/337.

by other counties, and perhaps even be extended to include maintenance work on an agency or other mutually acceptable basis, particularly where the private owner does not have the necessary facilities. Highway authorities should set an example in endeavouring to avoid injuring or destroying young roadside trees by the careless employment of mechanical hedgecutters.

105. A number of witnesses have drawn attention to the damage which is sometimes caused to roadside trees as a result of unskilled treatment by workmen engaged on the erection or maintenance of overhead telephone, telegraph, or electricity lines. Trees are sometimes severely lopped or pruned in a manner which may not only cause them permanent injury but spoils their appearance. The Post Office has statutory powers to prune trees without the owner's consent,* but we are assured that trees are only felled or lopped where this is unavoidable, and that instructions are issued that a month's notice must be given to the owner, who has the option of doing the work himself. We are told, however, that although the workmen carrying out such duties are instructed to use care, they have no specialised knowledge of trees. In order that this essential work may be carried out with as little damage as possible, we recommend that the authorities concerned should ensure that not less than one month's notice is given in all cases, so that the owners may have enough warning to enable them to do the work themselves if they desire, or to supervise it. We also recommend that some elementary technical instruction and advice should be issued to all workmen or contractors whose duties include such work.

### TECHNICAL ADVICE AND SKILLED ASSISTANCE

106. Technical advice on tree-planting and maintenance for private landowners is discussed later in this Report. Local highway authorities receive such advice from the Ministry of Transport and Civil Aviation, and from such bodies as the Roads Beautifying Association and other amenity organisations. They may also obtain expert guidance and help from private consultants, especially if they do not themselves employ expert staff. We have been told that roadmen are seldom given instruction in the treatment of roadside trees. We think that it is essential that they should receive some education in the simpler tasks associated with care and maintenance, especially in the protection of young trees, and in the best methods of pruning, lopping and felling larger ones.

### INFORMATION AND EDUCATION

107. Our attention has been drawn by witnesses to the serious damage which is often caused to roadside trees by the public. In some schools instruction is given regarding trees; the Forestry Commission supply some schools with literature or arrange for their local officers to give short talks, and some schools have adopted plots of trees. This practice, if pursued and where possible extended, might go far towards engendering, at least in coming generations, a better appreciation of the worth of trees. Where highway authorities have planted trees on road verges, labels indicating the species and the date of planting would do much to awaken public interest and discourage vandalism.

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*Telegraph (Construction) Act, 1908, Section 5.

## FINANCIAL CONSIDERATIONS

108. The planting and tending of roadside trees involve a certain amount of expense which is normally borne by private landowners or local authorities who grow them. Since such trees improve the amenities of the road and the district, we believe that the cost should be met mainly from funds available for this purpose. Where, however, the trees planted are forest trees which may be expected to be looked after in such a way as to produce usable timber, we think that roadside planting should be eligible for financial assistance under the new scheme about which we make recommendations later.

# CHAPTER VI

# *Other Sites for Growing Hedgerow and Farm Timber*

## INTRODUCTORY

109. Our terms of reference and the subsequent Ministerial request require us to make recommendations as to the best means of securing the planting and tending of timber in hedgerows, on farms, in parks and along roadsides. While the question of how far this is compatible with good agricultural practice is the main aspect of our enquiry, we have felt it right, in view of the national need for timber and the other advantages of maintaining adequate stocks of growing trees, to consider not only agricultural land and roadsides but also other sites which may be suitable for growing timber-producing trees.

## PARKLAND

110. The break-up of many large estates, of which parks were often an important feature, and the increasing need for food production, have led to the cultivation of much former parkland. A considerable area remains as such, some of it in private ownership, and some in the hands of local authorities or other public bodies. Wherever such land is kept mainly for amenity, even if it is used partly for grazing, it may well be capable of bearing more timber, and we feel that owners should replace some of the many park trees which have disappeared. Where periodical ploughing is to be undertaken trees can be re-grouped along drives or avenues, thus maintaining both amenity and timber without hindering the new use.

## COMMON-LAND

111. There are about 2 million acres of common-land in England and Wales.* Although some of it was formerly cultivated under war-time powers and much, though not all, is now used for grazing, a large proportion is derelict and capable of growing timber. We are aware that the problem of administering common-land to the best advantage is a complex one involving many legal and other difficulties. Nevertheless, we believe that even as the law now stands it is possible, by means of agreed schemes supported by the interested parties, to plant trees in groups or belts, both as a contribution towards the improvement of the land and as a means of improving the amenities and yielding a crop of timber; but it has hitherto been found very difficult to obtain agreement. There is also much potential scope for the future if new legislation is introduced. We therefore recommend an alteration of the law in order to make it easier for trees to be planted on common-land in the same way as on other land.

112. Commons, in the sense that the term is understood in England and Wales, are virtually extinct in Scotland, but in the Highlands there are "common grazings" on rough hill pasture situated beyond the limits of the arable land attached to crofting townships: and in other parts of Scotland there are "commonties", which are high-lying summer grazings. We think that such grazing land may also offer

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*Hansard—House of Commons Debates, 14th May, 1954. Col. 1656.

opportunities for small-scale tree-planting with similar objects in view. In the crofting counties this will be facilitated by the passing of the Crofters (Scotland) Act, 1955. It will now be the duty of a grazings committee to carry out works for the improvement of the common grazings, provided that they have the consent of a majority of the crofters ordinarily resident in the township and also the approval of the Crofters Commission.

### WASTELAND AROUND INDUSTRIAL ESTABLISHMENTS AND MINERAL WORKINGS

113. There are many places where industrial enterprises have resulted in construction works and spoil banks which injure the landscape and in some cases can only be described as eyesores. Their appearance is greatly improved by the planting of trees, apart from the fact that such planting can produce timber (Fig. 9). This type of land is often available round industrial estates and mineral workings where trees could be grown. We think that more planting of this kind should be undertaken by the managements of such enterprises. Local planning authorities should also use their powers under Section 89 of the National Parks and Access to the Countryside Act, 1949, which enables them to plant trees for amenity on land owned by them, or on other land with the consent of persons having an interest in it.

### RAILWAYS AND CANALS

114. The British Transport Commission has informed us that, following an approach made by the Council for the Preservation of Rural England, a review was carried out in 1948 on the question of increasing the planting of trees in such places as railway embankments and cuttings, unused spaces in and around marshalling yards, and along canals ; but the conclusion was that little could be done. In the case of railways this decision was based partly on engineering and operating difficulties such as the risk of fire from sparks and the danger which would arise from trees falling on to the permanent way. The conclusion was also based on the financial considerations involved in undertaking small-scale planting of a kind which would be unlikely to be an economic proposition. While we fully appreciate the force of these considerations from the Commission's point of view, we believe that there is a wider public interest involved, and that a proper regard for financial considerations should not alone prevent the planting and tending of trees in suitable places on land owned or managed by the Commission. We believe that there are in fact many sites on such land which could be planted with trees. Examples are embankments and heaps of surplus spoil along the line, waste land around stations, and dismantled track and disused stations. Furthermore, the risk of fire will be reduced when steam locomotives are no longer used.

115. Some canals and inland waterways could provide suitable sites for planting trees for timber production. We understand that consideration is at present being given by the Government Departments concerned to the future use of those canals which are no longer required for navigation. We suggest that some of these, if finally closed, might provide land which could be used in future for the growing of timber. The banks of navigable canals in many places may be suitable for growing trees, with consequent improvement of the amenities and an ultimate yield of timber. We believe that many more trees, particularly some species of poplars, could be grown on canal banks wherever they would not interfere with towing.

116. We were glad to note that the British Transport Commission is fully in sympathy with our objectives, and willing to give careful consideration to any specific proposals which may be put forward for particular sites ; and we recommend that wherever practicable that Commission should implement our suggestions in respect of railways and canals.

### AIRFIELDS

117. We believe that there is opportunity for more planting on some portions of airfields and on their peripheries. We recognise, however, that large parts of these and their approaches must be kept clear of obstacles, and that height restrictions are necessary in the vicinity of runways. We also recognise that steps must be taken to prevent trees from hindering the safe and efficient use of installations, signalling and intercommunication systems. Nevertheless, we think that more should be done to grow timber and to improve amenities by the planting of rows or clumps of trees in suitable places on or around airfields. Such planting would relieve the bareness, act as a screen or shelter, and might help to abate the nuisance of noise.

### LAND HELD BY SERVICE DEPARTMENTS

118. Apart from airfields, we think there is considerable scope for small-scale tree planting on other lands owned or held by the Service Departments. By arrangement with the Forestry Commission a certain amount of afforestation is being carried out on some larger areas of land occupied by the Admiralty, the War Department, and the Ministry of Supply, but planting on this scale is outside our terms of reference. We are, however, concerned with the planting of relatively small numbers of trees in such places as waste land round stores and ammunition dumps, munitions factories, workshops, ordnance and supply depots, hutted camps and barracks, and other similar establishments. We have been assured by these Departments and by the Air Ministry that, although some planting of this kind has already been done, especially at establishments under the control of the Ministry of Supply, there is room for more. The Departments are ready to undertake such planting on suitable sites, but have informed us that limiting factors are lack of funds and the need for expert practical assistance. We believe that more could be done to improve the amenities and augment the supply of timber by the energetic extension of planting in such places.

### DISUSED MILITARY INSTALLATIONS

119. A certain amount of land built over for war purposes has now been returned to the owners, and compensation paid because it would be uneconomic to attempt to restore the land to agricultural use. There is a risk that it will remain derelict and become unsightly waste. We think, however, that much of this land would afford suitable sites for small-scale tree-planting which, besides yielding timber and improving the amenities of the district, would screen the scars of the particular site.

### COASTAL AREAS WHERE THERE IS A DANGER OF EROSION OR FLOODING

120. There are a number of places where there is a risk of coastal erosion or flooding by the sea. We have noted that the Departmental Committee on Coastal

Flooding has drawn attention in its Report* to the fact that the planting of trees and shrubs has been used for consolidating natural defences, and have recommended that further research might be carried out by the Nature Conservancy in conjunction with River Boards, the Forestry Commission and certain University Departments. We support this recommendation.

### CONCLUSION

121. We hope that the above examples will suffice to show that there are a number of possible sites not on agricultural land where forest trees can be grown without risk of interfering with farming or other important interests. Although the scale of planting might be small, it could make a considerable contribution to the national stock of timber. A certain amount of planting of this kind is already being done; but we believe that more could be done. Carried out with care and skill, it can be made to bring life to barren spots, and hide the scars of war and industry; and it rarely fails to add to the comfort or enjoyment of man.

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*Report of the Departmental Committee on Coastal Flooding, May, 1954. (Cmd. 9165). H.M.S.O.

## CHAPTER VII

# *Steps which should be taken to Promote the Growing and Tending of Hedgerow and Farm Timber*

### INTRODUCTORY

122. Having reviewed all the varying circumstances under which hedgerow and farm timber could be cultivated, we now offer some practical recommendations. First and foremost come suggestions and advice to owners and tenants of land, as a reason and basis for voluntary action. In a matter affecting all country landowners and their tenants no measures are likely to be effective without their willing co-operation, which must be based on an understanding of the advantages which they are likely to reap, and the disadvantages which they should avoid. Secondly, we are of the opinion that Government intervention is desirable in certain respects. There is, for example, much room for further education and publicity assisted from Government resources, and for the organisation of technical advice and assistance. Private efforts are now hampered by financial considerations, and we have suggestions to make in regard to extension of the existing system of planting grants. Certain matters could with advantage be made the subject of further research. Finally, some amendments of the laws affecting landlords of agricultural holdings and their tenants, and of the responsibility of local authorities for maintaining trees on highways, appear to be required.

## (1) BY LANDOWNERS AND TENANTS

### FARMS AND ESTATES

### PLANTING

123. The considerations set out in Chapters III and IV have shown that hedgerow and farm trees can in suitable circumstances provide shelter and shade for stock: they may check erosion of light land and, by moderating extremes of temperature, advance the ripening of crops. The disadvantages that attend them apply with greatest force to arable land, though even here adverse effects can often be avoided by suitable location and other treatment. On other types of agricultural land, a considerable population of hedgerow and park trees can be supported without any disadvantages; and on most farms there is some land suitable for growing trees in the form of windbreaks or small spinneys (Fig. 10). The timber obtained from them is of value to owners and the nation alike, and in our view is capable of being considerably increased. We recommend that all concerned with the management of agricultural land should, in the light of the advice given in these chapters, give serious attention to the possibility of increasing their stock of hedgerow, park and farm timber, and should take action to do so wherever this can be done without harm to production.

## MAINTENANCE AND PROTECTION

124. Trees growing by themselves are liable to send out side-growth, thus increasing shade effect and spoiling the quality of the timber. Where this occurs periodical pruning is of importance. Thinning may be specially advisable in arable areas, to avoid excessive shade and the creation of an impermeable barrier which may cause eddies of wind with consequent damage to crops. The proper maintenance of trees includes the avoidance of their use as supports for wire fencing, which leads to a serious reduction in the value of their timber, besides being a danger to sawyers (Fig. 11). The standard of maintenance is often very low, and calls for much improvement. The work can often be done at times when farm labour might otherwise be idle. We recommend that attention should be given to these points by all concerned.

125. Young trees may be fatally injured and regeneration entirely destroyed by pests, in particular the rabbit and the grey squirrel. Protection against rabbits is generally less costly if trees are grown in groups rather than singly; but the cost of wiring trees individually is not prohibitive if, as is commonly the case, only a small number of trees is involved. Where trees are produced by allowing them to grow through hedges, protection is seldom required.

126. As the presence of rabbits may have so serious an effect on young trees, as well as on crops in general (though this menace has for the present been much reduced by myxomatosis), concerted and energetic action by the authorities and by occupiers of land is required to eradicate them. If there were no need to protect young trees against rabbits, the cost of establishment would be substantially reduced, and the growing of timber would become a more profitable enterprise; and this would be most marked in the case of small-scale planting, where the cost of fencing is relatively higher than for large areas. Some county authorities have been reluctant to use their powers to enforce action against rabbits in the past, and we recommend that full use should be made of the new powers under the Pests Act, 1954.

127. We also recommend that occupiers of land should give full support to the campaign sponsored by the Forestry Commission and the Agricultural Departments against the grey squirrel, which is a serious threat to young trees, especially hardwoods.

128. The incautious use of mechanical hedgecutters is leading to a serious depletion of young replacement growth in hedgerows. The "siding-up" of hedgerows by mechanical means is not injurious; and it is possible to avoid harming young trees in the process of "topping", without serious hindrance to progress or excessive increase of cost, if saplings and tellers are selected and marked in advance. In the design of these implements care should be taken that they are sufficiently manoeuvrable to enable such damage to be averted. We recommend that attention should be given to these points by all concerned. We also recommend that where it is necessary to fell hedgerow trees, the hedgerows themselves should as far as possible be retained, in order to provide shelter for wild animal, bird and plant life.

## SUCCESSION

129. A continuing supply of timber and the maintenance of amenity can only be assured on a farm or estate if the age distribution of trees is correct. The management of woodlands for continuous yield is a highly technical matter, but it will

generally be sufficient in dealing with hedgerow and farm trees to apply common-sense rules. We have already indicated in paragraph 25 one such rule, which may be adapted without difficulty to suit the type of tree and other local circumstances under consideration. It is sufficient to call attention to the necessity of providing enough young trees of varying ages to ensure that mature trees will be available over the years. We recommend that hedgerow and farm timber should be regarded, not merely as an accident of nature or a landscape embellishment, but as a crop and a long-term investment which will justify careful management and attention.

### CHOICE OF SPECIES

130. The choice of species for tree-planting on farms, along roadsides and on waste land is a matter for experts, and the best choice can only be made after study of all the factors relevant to each site. As a general rule we recommend that those broadleaved species which can be expected to yield the best hardwood timber should be grown wherever there is no reason to prefer other species. The species naturally dominant in the locality will often provide a useful guide; and full advantage should be taken of good natural regeneration. Nevertheless, there are many places other than in hedgerows where it would be more appropriate to plant conifers such as larch, which grows comparatively quickly and provides good timber for various uses on the farm. There is also considerable scope for the cultivation in suitable places of fast-growing hybrid poplars, selected varieties of which can give an excellent financial return on a rotation of twenty-five to thirty years. Moreover, poplars are suitable for planting in single lines or narrow strips on the margins of fields where they may afford valuable shelter and be an asset to agriculture (Fig. 8). Chestnut coppice grown on suitable sites can produce a crop of useful poles after twelve to eighteen years; once it is well established it requires little attention and can be repeatedly cropped for many rotations. Willows are suited to damp areas, and although their life is comparatively short they have some value as a windbreak; and on areas suited to cricket bat willow the financial return may be considerable.

### AGREEMENTS BETWEEN LANDLORDS AND TENANTS

131. These measures and suggestions will all be more productive if they form the subject of an agreed policy between landlord and tenant. We recommend that appropriate steps should be taken, where this has not already been done, by landlords and tenants on the lines indicated in paragraph 81.

### CO-OPERATIVE FORESTRY SOCIETIES

132. We believe that it would probably be to the mutual advantage of farming and forestry in this country if more farmers and landowners were to join the co-operative forestry society nearest to their district, and we recommend that these societies should extend their activities so as to include the provision of technical advice and practical assistance to farmers.

## PLANTING ON ROADSIDES

133. In Chapter V we expressed the opinion that more roadside trees should be grown, and we have indicated some of the considerations that should be applied in siting them, choosing the species and maintaining them, in order to ensure the safety of traffic and passers-by, and to improve amenity as well as to increase the general stock of timber. We would emphasise that many technical problems are

involved which require expert advice and assistance, and our recommendations should be read in the light of the considerations set out in the chapter. Subject to this, we believe that there is much scope for the planting of forest trees, large and small, in the neighbourhood of roads.

134. We therefore recommend that highway and other authorities who have appropriate powers should use them fully in suitable circumstances: and that they should endeavour to stimulate interest and action on the part of owners of neighbouring land and others who may be willing to co-operate in the work voluntarily.

135. We recommend also that care and maintenance, including periodical pruning, should be supervised and undertaken by suitably skilled persons. This particularly applies to any cutting of trees that may be necessary on account of the presence of overhead lines (para. 105). Recommendations which we make later as to education and grants for tree planting are also applicable.

136. We have noted that the ownership of trees within the limits of the highway may sometimes be in doubt (para. 101). Until the law is clarified by decisions of the Courts or by Statute, we recommend that questions of ownership, the right to fell, property in the timber, responsibility for maintenance and the like should be settled by agreement between the landowner and the highway authority at the time of planting, or when the land on which trees are growing comes under the control of the latter.

### PLANTING ON OTHER SITES

137. In Chapter VI we considered a number of other sites on which trees of the hedgerow type could be grown. We summarise below the recommendations which apply to the owners of such sites, or other persons who possess an interest in them:

(*a*) Park trees should be replaced wherever possible, either in the park itself or along drives and in avenues (para. 110).

(*b*) An endeavour should be made to plant more trees on common land and, in Scotland, on common grazings, where circumstances permit this to be done, by agreement between the persons who own, and those who have an interest in, such land (paras. 111 and 112).

(*c*) Proprietors of industrial establishments and mineral workings should undertake more planting of trees to hide disfigurements and afford shelter and timber: and in England and Wales planning authorities should use the powers given to them in Section 89 of the National Parks and Access to the Countryside Act, 1949, to plant trees for amenity purposes on land owned by them, or on other land with the consent of the persons having an interest in it (para. 113).

(*d*) Wherever practicable the British Transport Commission should undertake planting of trees on suitable railway and canal land (paras. 114-116).

(*e*) The possibility of further tree-planting on and near airfields should be considered, and it should be carried out where possible (para. 117).

(*f*) More tree-planting should be undertaken by Service Departments on waste land; and by owners of land on which there are derelict war-time installations in respect of which compensation has been paid (paras. 118 and 119).

## (II) BY ADMINISTRATIVE ACTION

### EDUCATION AND PUBLICITY

138. There is at present no recognised authority whose purpose is to promote the growth of hedgerow and farm timber, and farmers and landowners are sometimes in doubt where to look for advice and assistance. This points to the need for a campaign of education. Publicity is essential. The extent to which a publicity campaign will prove successful cannot be guaranteed, but without it little progress or improvement can be expected.

139. Various methods have been suggested to us, and several agencies have been named as being suitable to co-operate. Witnesses have generally agreed that the best results are likely to be obtained by securing the interest and co-operation of the youth of the country, and more especially of young farmers. While most witnesses have suggested that the Agricultural Departments and the Forestry Commission should play a prominent part, some feel that direct government propaganda is often unwelcome, and that education on these matters might best be achieved through the national and local organisations of landowners and farmers. It has also been impressed on us that, while a certain amount of general publicity is desirable, technical advice must be appropriate to the particular locality or region, because conditions vary so much in different parts of the country.

140. Much might be achieved by simple and well-written pamphlets, with helpful illustrations ; and by articles in the local and national press, farming and forestry journals and illustrated country magazines. Even more might be accomplished by the spoken word in B.B.C. talks and discussions for farmers, and in country life features generally ; by means of lectures and discussions at branch meetings of the National Farmers' Unions and Young Farmers' Clubs ; and by instruction in schools, agricultural colleges and farm institute courses. Oral publicity could also be carried out by officials of such organisations as the Forestry Commission, the Agricultural Departments, local branches of the Forestry societies and home-grown timber merchants' associations, and of local planning authorities, in the course of their personal contacts with individual farmers. Visual publicity could also be most effective in the form of television and cinema newsreels showing examples of planting schemes and well-grown farm timber. Suitable models and other display material at agricultural shows attract much interest, especially if the agricultural and forestry exhibits are closely associated. Hedgerow and farm timber might also be made the main theme for some of the farm walks which are organised by Young Farmers' Clubs. There is no lack of adequate media for conducting a publicity campaign. The main requirement is that a lead should be given, and that some authority should undertake the task of launching and directing the campaign and securing the co-operation of the various bodies who could assist.

141. We hope that the conclusions and much of the argument and descriptive matter in this report will suggest acceptable material, and we think that the reasons for encouraging the growing of hedgerow and farm timber should be clearly explained.

142. We recommend that the Agricultural Departments should be made responsible for directing a campaign of education and should give a lead by issuing advisory leaflets prepared in collaboration with the Forestry Commission. The Agricultural Departments, in consultation with the Forestry Commission, should build up a library of photographic slides, film strips and short films, preferably

in colour, illustrating hedgerow and farm timber and roadside trees in various settings, and covering such matters as choice of site and species, methods of planting, protection and maintenance (including fencing and pruning), felling, conversion and utilisation. In agricultural colleges and farm institute courses adequate attention should be given to the cultivation and uses of hedgerow and farm timber.

### TECHNICAL ADVICE

143. Apart from a publicity campaign on the lines suggested above, we are satisfied that landowners and farmers will need more guidance than can be gained from pamphlets, lectures or films. They will need expert technical advice on the particular problems of any scheme they have in mind and in relation to the local conditions on their own land; and they will wish to know how such advice can be obtained. We recommend, therefore, that steps should be taken to provide an advisory service by means of which those concerned can obtain a list of private consultants, co-operative forestry societies, and other persons or organisations able to advise. The important points are that such advice should be expert, should be guided by local knowledge, and should be available to individual applicants.

144. We recommend that the Agricultural Departments, in conjunction with the Forestry Commission, should be charged with the duty of organising such an advisory service on a regional basis. It might be best to form local advisory panels, and to put applicants in touch with suitable individual experts if they require advice necessitating a visit to their land. These panels, or some local office of the Agricultural Departments, could be the repository for all available written advice which is relevant to their district, and they should be kept apprised of the results of research and experience elsewhere so that they can give the most appropriate information to applicants.

145. The technical advice available should cover the whole cycle of operations from the consideration of suitable sites for planting and choice of species, to the technique of felling and utilisation, and the problems of marketing. It should be taught that it is sometimes unnecessary actually to plant new hedgerow trees: if there are suitable parent trees in the neighbourhood all that may be necessary is to protect selected saplings and suckers when the hedge is being trimmed or laid (Fig. 12). Advice should be available on planting methods, and the care and maintenance of young trees, including fencing and other protection against livestock and rabbits, pests and disease; and stress should be laid on the value of pruning as a means of reducing the shade cast by a tree and of improving the ultimate value of the timber. In short, a programme of regular management reduced to its simplest terms should be available to owners and occupiers of agricultural land; and since demonstration is one of the best methods of teaching, we think the Agricultural Land Commission should set an example on farms under its control.

146. We also recommend that every agricultural executive committee should include a member with practical knowledge of silviculture and arboriculture.

### PRACTICAL ASSISTANCE

147. In addition to technical advice, landowners and farmers should be able to obtain expert practical assistance if they need it for the planting and management of hedgerow and farm timber, and they should be able to look to the local officers

of the Agricultural Departments to put them in touch with approved contractors in the area who would be able to carry out the work of planting, tending and felling.

148. The Forestry Commission are sometimes able to undertake work on an agency basis for private landowners not too remote from the Commission's own forestry areas. There are a number of planting contractors operating in various parts of the country; and a growing number of timber-merchants are now carrying out planting and other operations on contract. We recommend that the Agricultural Departments, through their local offices, should compile a list of those willing to carry out work for farmers or landowners.

149. Farm labour is often unavailable or insufficiently skilled, so that more practical assistance is needed for planting and tending hedgerow trees; but if they were given a small amount of suitable instruction farmers might be enabled to undertake the normal kind of work involved in the planting and care of trees growing on the farm; and on farms where there are workers with the necessary skill and experience, time can usually be found to employ them on such work at slack periods. As a long-term measure, therefore, we recommend that the Agricultural Departments should continue to organise short, practical courses and demonstrations in the planting and care of trees. The head forester of the nearest woodland estate, or an officer of the Forestry Commission, would no doubt assist.

### CO-OPERATIVE FORESTRY SOCIETIES

150. The Forestry Commission have already done much to support and encourage a number of co-operative forestry societies, especially in the early years immediately after their formation. We recommend that the Government should continue to encourage the formation and development of these societies, with a view to reaching the position where every rural district is within the sphere of activity of at least one such society.

### AREA LAND SURVEYS AND SELECTION OF SITES

151. We have received information about the beneficial results which have been achieved by the woodland surveys carried out by the Forestry Commission and the Agricultural Land Service during the past few years in parts of rural Wales. The method adopted in these surveys is for the Forestry Commission to carry out a systematic exploration of the woodland areas in a selected territory, bringing to the notice of the landowners concerned woods which are not properly managed, and areas of bare land, scrub or derelict woodland, which ought to be replanted or otherwise brought into full production. The main object is to encourage and assist landowners to retain and manage their woodlands properly in accordance with the rules and practice of good forestry, and to make the best possible use of all their land in the interests of food and timber production. These surveys are primarily in the interests of good forestry, yet they have led to substantial improvements not only in woodland management but in farm management also. Although in some cases the Commission's hope that landowners would undertake the rehabilitation of their woodlands themselves has not been realised, some of these owners have undertaken to reclaim part of their derelict land to agricultural use, or have voluntarily leased or sold woodland areas to the State, so that rehabilitation can be undertaken by the Commission.

152. We recommend that the Agricultural Departments should institute surveys throughout the country, on similar lines to the woodland surveys, with a view to

discovering small waste areas of farmland which are unsuitable for economic food production but might be suitable for growing farm timber. In the woodland surveys there is the underlying and ultimate sanction of compulsory acquisition for forestry purposes, and, in the case of idle or mismanaged agricultural land, the threat of a supervisory order or dispossession under the Agriculture Acts; but we think that compulsory acquisition or dispossession would not be practicable in the case of small waste areas. Moreover, we believe that a persuasive approach to the owners would secure a great measure of voluntary co-operation which would be likely to lead to the more widespread use of such land for the production of farm timber if it is unsuitable for reclamation to agriculture.

## FINANCIAL ASSISTANCE

153. Financial assistance is at present available from the Forestry Commission for approved planting schemes; but the various grants are designed to assist landowners to undertake forestry operations, rather than the small-scale type of planting with which we are concerned in this report. The Small Woods Planting Grant is normally restricted to schemes with a minimum of two acres planted in one block; and the Poplar Planting Grant is similarly restricted to blocks of two acres or more, or to a minimum of 200 trees planted on any one estate in a year. Accordingly, planting of smaller areas or of other species in rows or lines would not at present qualify for the Forestry Commission planting grants. Farmers in the hill farming and livestock rearing areas may obtain some financial assistance from the Agricultural Departments towards the cost of establishing shelter belts which are approved as part of a farm improvement scheme; but apart from this, no grants are available from the agricultural authorities for the planting of trees. We think that additional grants should be made available to encourage the planting of smaller areas or a smaller number of trees in suitable places where this would produce an ultimate yield of timber.

154. Accordingly we recommend that a new grant should be introduced for approved planting schemes on farms, and that the amount of grant should be related to the cost of planting, with a suitable maximum and minimum. Schemes might thus comprise the planting of clumps under two acres, rows, avenues, or individual trees, or some combination of these alternatives, provided that enough trees were planted to bring the cost up to the minimum necessary to qualify for the grant. This would do much to encourage each landowner to undertake the maximum amount of planting, besides combining some measure of flexibility in drawing up schemes with the need to ensure that they are large enough to justify the trouble and expense of administration. We think that the Forestry Commission should be responsible for payment of the grants, but in the case of schemes on agricultural land the applicant should first obtain approval from the appropriate Agricultural Department. It is desirable, moreover, that at the upper limit the new grant should not be more favourable than the existing Small Woods Planting Grant. We further recommend that the new grants should not be confined to planting by landowners and farmers in agricultural districts, but should be available if required for schemes carried out in other suitable places, such as along roadsides and on small pieces of waste land in rural areas. While the prospect of an ultimate yield of timber should be the main criterion in assessing individual applications for the new grant, we think that the interests of agriculture and amenity should be taken into account.

### RESEARCH

155. We referred in Chapter III (para. 40) to work which has been done or is now in progress on the part played by trees in influencing climate, and their effect on shade and shelter. We recommend that this work should be continued and the results co-ordinated with work already done, and published from time to time in a form suitable for those concerned. In particular we recommend that local offices of the Agricultural Departments should be kept apprised of the results of these studies so that their advisory services to farmers and landowners may be up to date (para. 144). We also recommend that the possibility of maintaining animals in the open for longer periods each year when there are trees to afford shelter, should be further studied (para. 74).

156. In Chapter V (para. 93) we referred to the risk of damage as a result of the common elm becoming infected with elm disease, and we recommend that current research into the prevention and cure of this disease should be pursued.

157. In Chapter VI (para. 120) we drew attention to the Report of the Departmental Committee on Coastal Flooding, and we recommend that further research should be made into the possibilities of using forest trees to assist in arresting coastal erosion, in reclamation of sand dunes, and in the prevention of flooding by the sea.

## (III) BY LEGISLATION

### PLANTING BY TENANTS AND THE AGRICULTURAL HOLDINGS ACTS

158. We drew attention in paragraphs 82 and 83 to the difficulty which now arises if landlords and tenants fail to agree on the desirability of planting trees, and we expressed our agreement with the views of witnesses that the position of tenants should be strengthened. We recognise the difficulty inherent in this approach to the question, but in view of the very large acreage of farm land involved we consider that some incentive for tenants should be provided where none exists at present. Accordingly we recommend that steps should be taken to afford tenant-farmers the statutory right to plant trees on their farms with the consent of the landlord or, failing this, with the consent of the appropriate Minister; and, furthermore, that tenant-farmers who do in fact plant trees with such consent should be entitled to fair compensation on the expiry of the tenancy.

159. Our attention was drawn to the analogy between the planting of trees on farms and other long-term improvements, such as the planting of osier beds, which in certain circumstances tenants may carry out under the provisions of the Agricultural Holdings Act, 1948. This Act (which applies to England and Wales) also provides for compensation to the tenant, on the expiration of the tenancy, to the extent that the value of the holding as an agricultural holding has been increased in consequence of the improvement. The Third Schedule of the Act specifies the nature of these improvements, those included in Part I of the Schedule requiring the consent of the landlord, while those included in Part II are subject to a right of appeal to the Minister if the landlord's consent is withheld. The Act also provides that the Schedule may be altered by Statutory Order.

160. There was much support in evidence for the treatment of tree-planting as an improvement on similar lines. Some witnesses thought that the landlord's consent should be essential, some that the right of appeal to the Minister should

be given: others thought that the first of these should be tried, and the second resorted to if it failed. In view of the fact that these provisions would be intended for use in the event of disagreement, we inclined to the view that a right of appeal would be appropriate, and we think the change could be effected quite simply by amending the appropriate Schedule.

161. Accordingly, we recommend that the Minister of Agriculture, Fisheries and Food should exercise his statutory powers to amend Part II of the Third Schedule of the Agricultural Holdings Act, 1948, by inserting words to cover the planting of trees. We also recommend that the Secretary of State for Scotland should make a similar amendment to Part II of the First Schedule of the Agricultural Holdings (Scotland) Act, 1949, which permits a like treatment of tenants' improvements, differing only in that compensation is based upon the value of the improvement to an incoming tenant, rather than upon the increased value of the holding as such.

### OWNERSHIP AND MAINTENANCE OF ROADSIDE TREES

162. We have noted in Chapter V (para. 103) that the law does not seem to be entirely clear in regard to the powers of highway authorities to trim roadside hedges and enforce the cutting and trimming of trees which overhang the highway. We recommend that the law should be clarified and brought up to date on this point when opportunity offers.

### COMMONS

163. We have referred in Chapter VI (para. 111) to the difficulty of making use of common land for planting trees even when it is of little value for other purposes, or when this would be in the interests of timber production, amenity, or improvement of the land for agricultural purposes. We recommend that the law should be altered to facilitate the use of common land for these purposes whenever it is to the general advantage to do so.

### CONTROL OF FELLING AND REPLANTING

164. In Chapter II we drew attention to the fact that a considerable quantity of hedgerow and park timber may be felled without licence or other form of control (paras. 16 and 28). A number of witnesses were of the opinion that this is an important factor in the depletion of hedgerow timber, and some of them have expressed the view that the existing controls over the felling of hedgerow and farm trees are inadequate. A few have made suggestions for altering the law, or applying the existing law more strictly, in order to secure more effective control of felling, especially of young trees, and to make replanting obligatory. On the other hand, many witnesses strongly deprecate any form of compulsion, and have suggested that replacement either in the hedgerows or elsewhere could be best achieved by persuasion outside the licensing system. Some witnesses have gone so far as to say that the licensing regulations should not apply to hedgerow and farm trees, or at least that the control should be operated by the agricultural authorities rather than by the Forestry Commission. We have thought it advisable, therefore, to consider the existing law relating to the control of felling by licences and Tree Preservation Orders, and the way in which the powers available under the Forestry Acts and the Town and Country Planning Acts are applied to such trees.

165. As a general rule it is necessary to obtain a licence under the Forestry Act, 1951, before trees are felled. This obligation is, however, subject to a number of exceptions (specified in Section 2 of the Act), which were no doubt designed to

facilitate administration, and to save owners from the trouble of applying for licences for certain kinds of essential felling, or other felling which is always justifiable in the course of normal estate management and which, within the prescribed limits, would not prejudice the Commissioners' general duty of promoting the interests of forestry, the production and supply of timber, and the maintenance of adequate reserves of growing trees. Among these exceptions the felling of trees under three inches in diameter, and the felling of up to 825 cubic feet of timber in any quarter, though generally harmless so far as woods and forests are concerned, may have a special significance in regard to hedgerow and farm timber. Where a licence is required by the Act, and an application is made to the Forestry Commission, we are satisfied that the system followed by the Commission is generally such as to afford adequate attention to the conservation of timber and the interests of amenity and agriculture ; and in particular we think that the Commission's practice of consulting the agricultural authorities in appropriate cases is sufficient to invalidate the suggestion that responsibility for the licensing of hedgerow and farm timber should be transferred either to the Agricultural Departments or to Agricultural Executive Committees. The Commission can refuse to license premature felling, although they may sometimes allow it on the advice of the agricultural authorities if the trees are a serious nuisance to farmers. As regards replacement, the Act empowers the Commissioners to grant a licence subject to conditions requiring the replanting of the land on which the felling takes place ; but normally it is not practicable to exercise this power in the case of licences for the felling of hedgerow, park and roadside trees, or for the clear felling of very small areas. The Commissioners may also attach conditions requiring the planting or replanting of an area *other* than that on which authorised felling takes place, but this can only be done by agreement with the owner, who is unlikely to accept such conditions in licences for hedgerow, farm, park or roadside trees.

166. The Town and Country Planning Acts of 1947 empower local planning authorities, if they consider it expedient in the interests of amenity, to make Tree Preservation Orders to prohibit the felling of trees without their consent. An order does not come into effect until it has been confirmed by the Minister of Housing and Local Government or, in Scotland, by the Secretary of State. Where an owner obtains consent under an order for the felling of trees, the authority may require him to replace them, either on the same site or in the immediate vicinity, and to protect and maintain the young trees. We understand, however, that in practice authorities have generally preferred to leave the management of hedgerow and farm timber on agricultural land to the owners, and the making of orders in such cases has been comparatively rare.

167. It appears, therefore, that unless they are subject to a Tree Preservation Order, the felling of young trees under three inches in diameter is free from control. The Forestry Commission control over the felling of larger hedgerow and farm trees is not complete, and in practice they can do little to make the replacement of such trees compulsory. Local planning authorities, however, have the power to exercise a considerable measure of control over the felling and replacement of hedgerow and farm trees, including those under three inches in diameter, if justified in the interests of amenity. Whilst the conclusion we came to in Chapter II, namely, that it is necessary to reduce the felling and increase the planting and tending of young trees, might indicate that it is desirable to strengthen the existing controls by extending them to every tree, including those

under three inches in diameter, we think that this would be administratively impracticable, and an undue burden on landowners and farmers. Although we do not suggest that the powers of local planning authorities should be altered, or that they should refrain from making orders over trees which are important to the amenity of the district or the appearance of the landscape merely because they are located in hedges on or near agricultural land, we think that better results might often be achieved by voluntary arrangements. We consider that the future maintenance of adequate stocks of hedgerow, farm, park and roadside trees would be best secured by educating and persuading farmers and landowners, and by the additional financial and other assistance which we have suggested, rather than by any change in the law relating to felling licences and Tree Preservation Orders. Accordingly, we do not think any change is needed in the structure of the existing controls.

168. We wish to place on record our appreciation of the very efficient services of the secretary to the Committee, Mr. Farmer, and of the assistant secretary, Miss Armstrong. Without their assistance our task would have been much more difficult.

MERTHYR, *Chairman*
HADDINGTON
F. GEO. CHALK
N. D. G. JAMES
JOHN C. WALLACE MANN
A. D. C. LE SUEUR
G. T. WILLIAMS

T. FARMER, *Secretary*
15th July, 1955

# *Summary of Recommendations*

1. All concerned with land ownership or management should be encouraged to co-operate in maintaining and, where practicable, increasing the numbers of trees of the hedgerow and farm type, and to accept such measures as may be expedient to reconcile the interests involved. (*paragraph* 64).

2. On arable farms trees should be planted for timber production, shelter and amenity on small waste areas. (*paragraph* 72).

3. On grassland farms hedgerow and park timber should not be prematurely removed; and its replacement should be encouraged where there is unlikely to be any large-scale conversions to arable farming. (*paragraph* 75).

4. More should be done to bring the advantages of planting hill shelter belts to the notice of landowners and farmers, and to provide expert advice and practical assistance locally. (*paragraph* 77).

5. Local authorities should assist in the growing of more roadside trees in suitable places, both by using the powers available to them and by encouraging the voluntary efforts of landowners and others who may be willing to co-operate. (*paragraphs* 91 *and* 134).

6. Wherever there is a combination of suitable soil conditions and sufficient space, large forest trees should be grown as roadside trees; but where there is not enough space either smaller types of timber-producing trees should be planted, or the large-growing species should be felled before they reach their full stature and become a nuisance or a danger. (*paragraphs* 92 *and* 133).

7. When the line for any new road is being chosen, efforts should be made to retain existing trees and spinneys and to adopt them as features of the highway; and provision should be made so far as possible for planting trees after the road is constructed. (*paragraph* 97).

8. Until the law is clarified, questions of ownership of roadside trees, right to fell, property in the timber, responsibility for maintenance and the like should be settled by agreement between the landowner and the highway authority. (*paragraphs* 101 *and* 136).

9. The law relating to the powers of highway authorities to trim roadside hedges and enforce the cutting and trimming of trees which overhang the highway should be revised to meet present day conditions, and made uniform throughout Great Britain. (*paragraphs* 103 *and* 162).

10. Roadside trees should be subjected to regular inspection, pruning and trimming by skilled persons; and highway authorities should undertake such maintenance work in the case of privately-owned trees by arrangement with those owners who require this service. (*paragraphs* 104 *and* 135).

11. Public authorities having powers to lop or prune trees without the owner's consent should give the owner sufficient notice to enable him to do the work himself should he so desire. (*paragraphs* 105 *and* 135).

12. Elementary technical instruction should be given to workmen and contractors employed to lop or prune roadside trees. (*paragraphs* 105 *and* 106).

13. Tree planting schemes along roadsides should be eligible for financial assistance in the same way as small schemes in other places. (*paragraphs* 108 *and* 154).

14. Park trees should be replaced wherever possible, either in the park itself or along drives and in avenues. (*paragraphs* 110 *and* 137).

15. An endeavour should be made to plant more trees on common land, and in Scotland on common grazings, by agreement between the persons who own, and those who have an interest in, such land. (*paragraphs* 111, 112 *and* 137).

16. The law should be altered to facilitate the use of common land for planting trees for timber-production, amenity, or improvement of the land for agricultural purposes. (*paragraphs* 111 *and* 163).

17. Proprietors of industrial establishments and mineral workings should undertake more planting of trees to hide disfigurements and afford shelter and timber. (*paragraphs* 113 *and* 137).

18. Local authorities in England and Wales should exercise their powers under Section 89 of the National Parks and Access to the Countryside Act, 1949, to plant trees for amenity purposes. (*paragraphs* 113 *and* 137).

19. The British Transport Commission should plant more trees on suitable railway and canal land. (*paragraphs* 114-116 *and* 137).

20. Further tree-planting should be done in suitable places on and around airfields. (*paragraphs* 117 *and* 137).

21. The Service Departments and the Ministry of Supply should plant more trees on small areas of waste or unproductive land at establishments under their control. (*paragraphs* 118 *and* 137).

22. Trees should be planted by owners of waste land on which there are derelict war-time installations. (*paragraphs* 119 *and* 137).

23. All concerned with the management of agricultural land should increase their stock of hedgerow and farm timber wherever this can be done without harm to production. (*paragraph* 123).

24. More attention should be given to the care and maintenance of hedgerow and farm trees, which should be treated as a crop and a long-term investment. (*paragraphs* 124 *and* 129).

25. Concerted and energetic action should be taken by the authorities and occupiers of land to eradicate rabbits ; and the authorities should make full use of the new powers under the Pests Act, 1954. (*paragraph* 126).

26. Occupiers of land should give full support to the campaign sponsored by the Forestry Commission and the Agricultural Departments against the grey squirrel. (*paragraph* 127).

27. Attention should be given by all concerned to the more careful use of mechanical hedgecutters in trimming hedgerows ; and where it is necessary to fell hedgerow trees, the hedgerows themselves should as far as possible be retained. (*paragraphs* 104, 128 *and* 135).

28. As a general rule those broadleaved species of forest trees which can be expected to yield the best hardwood timber should be grown where there is no reason to prefer other species ; but full advantage should be taken of good natural regeneration, and of opportunities for growing hybrid poplars, larch, chestnut coppice and willows in suitable places. (*paragraph* 130).

29. The planting, maintenance and protection of trees on farms should be the subject of an agreed policy between landlord and tenant. (*paragraphs* 81 *and* 131).

30. Co-operative forestry societies should provide technical advice and practical assistance to farmers. (*paragraph* 132).

31. The Agricultural Departments should be responsible for directing a campaign of education on the cultivation of hedgerow and farm timber. (*paragraph* 142).

32. The Agricultural Departments, in consultation with the Forestry Commission, should build up a library of photographic slides, film strips and short films to illustrate the growing, tending and utilisation of hedgerow and farm timber. (*paragraph* 142).

33. Adequate attention should be given in agricultural colleges and farm institute courses to the cultivation and uses of hedgerow and farm timber. (*paragraph* 142).

34. Information covering all operations involved in the management of hedgerow and farm timber should be available to every owner and occupier of agricultural land. (*paragraph* 145).

35. The Agricultural Land Commission should set an example by growing and tending hedgerow and farm timber on farms under its control. (*paragraph* 145).

36. Every agricultural executive committee should include a member with practical knowledge of silviculture and arboriculture. (*paragraph* 146).

37. The Agricultural Departments and the Forestry Commission should co-operate through their local offices to compile lists of contractors, timber merchants, private consultants, co-operative forestry societies, and other persons or organisations able to advise and give practical assistance to farmers or landowners in the planting and management of hedgerow and farm timber. (*paragraphs* 144, 145, 147 *and* 148).

38. The Agricultural Departments should continue to organise short practical courses and demonstrations in the planting and care of trees on farms. (*paragraph* 149).

39. The Government should continue to encourage the formation and development of co-operative forestry societies, with a view to reaching the position where every rural district is within the sphere of activity of at least one such society. (*paragraph* 150).

40. The Agricultural Departments should institute surveys throughout the country with a view to discovering small waste areas of farm land which are unsuitable for economic food production, and should attempt to persuade the owners to use such areas for growing farm timber. (*paragraph* 152).

41. A new grant should be introduced for approved tree-planting schemes on farms. The amount of the grant should be related to the cost of planting, with a suitable maximum and minimum. (*paragraph* 154).

42. Research into the influence of trees on climate, and their effect on shade and shelter, should be continued, and the results published in suitable form. Local offices of the Agricultural Departments should be kept informed. (*paragraphs* 40, 143, 144 *and* 155).

43. The possibility of maintaining animals in the open for longer periods each year on land sheltered by trees should be further studied. (*paragraphs* 74 *and* 155).

44. Research into the prevention and cure of elm disease should be continued. (*paragraphs* 93 *and* 156).

45. Further research should be made into the possibilities of using forest trees in arresting coastal erosion, and in the stabilisation of sand dunes to prevent flooding by the sea. (*paragraphs* 120 *and* 157).

46. Tenant-farmers should have the statutory right to plant trees on their farms with the consent of the landlord or, failing this, with the consent of the appropriate Minister, and should be entitled to compensation for such improvement on the expiry of the tenancy. (*paragraphs* 158 *and* 161).

47. No change is needed in the structure of the existing controls over tree-felling and replanting in relation to hedgerow and farm timber. (*paragraph* 167).

# APPENDIX A

## *Sources of Evidence*

### I—LIST OF ORGANISATIONS AND INDIVIDUALS WHO SUBMITTED WRITTEN EVIDENCE

1. Admiralty
2. Agricultural Engineers Association
3. Air Ministry
4. Association for the Preservation of Rural Scotland
5. Mr. P. Barnett
6. Chartered Auctioneers and Estate Agents Institute
7. Conference of Outdoor Associations
8. Co-operative Forestry Society (Scotland) Ltd.
9. Council for the Preservation of Rural England
10. Council for the Preservation of Rural Wales
11. Country Landowners Association
12. County Councils Association
13. Mr. C. Denton Hornby, M.SC., A.R.I.C.
14. Federated Home Timber Associations
15. Major H. T. H. Foley, M.B.E., B.A., J.P.
16. Glasgow Tree-Lovers Society
17. Mr. R. W. Gloyne, B.SC.
18. Post Office Engineering Department
19. Mr. Brian Hackett, M.A., A.R.I.B.A., A.M.T.P.I., A.I.L.A.
20. Institute of Landscape Architects
21. Land Agents Society
22. Ministry of Supply
23. National Association of Parish Councils
24. National Farmers Union, England and Wales
25. National Farmers Union of Scotland
26. National Parks Commission
27. Monsieur J. Pourtet (French National Poplar Commission)
28. Roads Beautifying Association
29. Royal Agricultural Society of England
30. Royal Automobile Club, Automobile Association, and Royal Scottish Automobile Club Standing Joint Committee
31. Royal Forestry Society of England and Wales
32. Royal Highland and Agricultural Society of Scotland
33. Royal Institution of Chartered Surveyors
34. Royal Scottish Forestry Society
35. Royal Welsh Agricultural Society
36. Rural District Councils Association
37. Scottish Society for the Protection of Wild Birds
38. Mr. J. T. Smith (Member of the Home Timber Merchants Association of Scotland)
39. Mr. B. Urquhart, B.A. (Forestry), F.L.S.
40. Mr. G. A. Wheatley, M.A., B.C.L., and Brigadier A. C. Hughes, C.B.E., T.D., D.L., B.SC., M.INST.C.E. (Clerk of the County Council and County Surveyor, respectively, Hampshire County Council)

41. War Department
42. Wild Plant Conservation Board

*Note :* Information in letters received from a number of bodies and individuals was also taken into consideration.

## II—LIST OF WITNESSES

| | |
|---|---|
| Agricultural Engineers Association : | Mr. I. P. Riddoch |
| Association for the Preservation of Rural Scotland : | Mr. H. A. Rendel Govan, A.R.I.B.A.<br>Commander Courtney Clarke, D.S.O., R.N. (Retd.)<br>Mrs. Mackenzie Anderson |
| Mr. P. Barnett—(Farmer, Perthshire) | |
| British Ornithologists Union<br>British Trust for Ornithology<br>Royal Society for the Protection of Birds | Dr. Bruce Campbell |
| Chartered Auctioneers and Estate Agents Institute : | Mr. E. C. Ingram, F.R.I.C.S., F.A.I.<br>Mr. A. H. Halls, F.R.I.C.S., F.A.I.<br>Mr. J. Muir Watt |
| Co-operative Forestry Society (Scotland) Ltd. : | Mr. Bruce Urquhart, B.A. (Forestry), F.L.S. |
| Council for the Preservation of Rural England<br>Institute of Landscape Architects | Mr. G. Langley-Taylor, F.R.I.B.A., F.R.I.C.S., F.L.A.S., M.T.P.I.<br>Miss Brenda Colvin, P.P.I.L.A. |
| Council for the Preservation of Rural Wales : | Professor E. C. Mobbs, O.B.E., M.A., B.SC.<br>Mr. H. J. D. Tetley, Q.A.L.A.S. |
| Country Landowners Association : | The Viscount Newport, T.D., D.L., J.P.<br>Major Sir Richard Proby, Bt., M.C. |
| County Councils Association : | The Rt. Hon. The Lord Hylton<br>Mr. W. J. Cumber, C.B.E.<br>Mr. E. H. Doubleday, O.B.E.<br>Mr. G. P. Attenborough |
| Mr. C. Denton Hornby, M.SC., A.R.I.C. (Chief Technical Officer, Infestation Control Division, Ministry of Agriculture, Fisheries and Food) | |
| Major J. D. D. Evans, J.P. (Landowner, Brecon)* | |
| Federated Home Timber Associations : | Mr. J. R. Maeer |
| Major H. T. H. Foley, M.B.E., B.A., J.P. (Landowner, Herefordshire) | |
| Glasgow Tree-Lovers Society : | Professor K. W. Braid, O.B.E., M.A., B.SC.(Aberdeen), M.A.(Cambridge)<br>Mr. T. W. Dalgleish (Forestry Consultant)<br>Mrs. Mackenzie Anderson (Hon. Secretary) |

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*President of the Royal Forestry Society of England and Wales, 1952 to 1954.

| | |
|---|---|
| Mr. R. W. Gloyne, B.SC. (Meteorological Officer, Air Ministry) | |
| Post Office Engineering Department: | Mr. R. H. Cox, B.SC., Senior Executive Engineer |
| Mr. Brian Hackett, M.A., A.R.I.B.A., A.M.T.P.I., A.I.L.A. (Lecturer in Landscape Architecture, University of Durham) | |
| Land Agents Society: | Mr. W. J. Arnold, F.L.A.S.<br>Lt.-Col. John Clark, F.R.I.C.S., F.L.A.S. |
| National Association of Parish Councils: | Mr. Arnold Baker, B.A. |
| National Farmers Union, England and Wales: | Mr. Harold Woolley<br>Mr. J. S. Phillips |
| National Farmers Union of Scotland: | Mr. A. H. B. Grant<br>Mr. G. B. R. Gray<br>Mr. W. J. Campbell |
| National Parks Commission: | Mr. L. J. Watson |
| Lt.-Col. E. R. Pratt, M.C., D.L. (Landowner, Norfolk) | |
| Roads Beautifying Association: | Mr. R. C. B. Gardner, O.B.E. |
| Royal Agricultural Society of England: | Mr. Henry A. Benyon, D.L., J.P.<br>The Hon. C. Fellowes |
| Royal Automobile Club, Automobile Association, and Royal Scottish Automobile Club Standing Joint Committee: | Mr. L. Lynch<br>Mr. J. Phillips |
| Royal Forestry Society of England and Wales: | Mr. C. M. Floyd, O.B.E., F.R.I.C.S., F.L.A.S.<br>Mr. W. E. Hiley, M.A. (Oxon.), O.B.E.<br>Mr. R. C. B. Gardner, O.B.E. |
| Royal Highland and Agricultural Society of Scotland: | Captain James Craig<br>Lt.-Col. Sir John A. Gilmour, Bt., D.S.O.<br>Mr. R. MacGregor Lemmon, B.L. |
| Royal Institution of Chartered Surveyors: | Sir William Ling Taylor, C.B.E.<br>The Hon. G. J. Bourke |
| Royal Scottish Forestry Society: | Mr. S. F. Carruthers<br>Mr. Bruce Urquhart, B.A. (For.), F.L.S. |
| Royal Welsh Agricultural Society: | Major J. D. D. Evans, J.P.<br>Mr. Langshaw Rowland |
| Mr. G. A. Wheatley, M.A., B.C.L., and Brigadier A. C. Hughes, C.B.E., T.D., D.L., B.SC., M.I.C.E. (Clerk of the County Council and County Surveyor, respectively, Hampshire County Council) | |
| Wild Plant Conservation Board: | Dr. A. S. Watt, B.A. |
| Captain G. C. Wolryche-Whitmore (Landowner, Shropshire) | |

# APPENDIX B

## *Census of Hedgerow and Park Timber*

### VOLUME OF TIMBER IN HEDGEROW AND PARK TREES COMPARED WITH THE GRAND TOTAL VOLUME OF STANDING TIMBER

*Table* 1. *Derived from Tables* 35-38 *of Census Report No.* 2.

*Millions of cubic feet, hoppus measure, over bark.*

| | Great Britain | England | Wales | Scotland |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| (a) SOFTWOOD | | | | |
| Grand Total .. .. .. .. | 1271·6 | 480·3 | 87·8 | 703·5 |
| Whereof: Hedgerow and Park, .. | 58·6 | 44·2 | 10·8 | 3·6 |
| *Percentage* .. .. .. | *5* | *9* | *12* | *1* |
| (b) HARDWOOD | | | | |
| Grand Total .. .. .. .. | 2501·6 | 1905·1 | 230·8 | 365·7 |
| Whereof: Hedgerow and Park .. | 748·1 | 636·3 | 75·7 | 36·1 |
| *Percentage* .. .. .. | *30* | *33* | *33* | *10* |

### NUMBER OF HEDGEROW AND PARK TREES BY COUNTRIES AND CATEGORIES—GREAT BRITAIN—SAPLINGS AND TIMBER—ALL SPECIES

*Table* 2. *Derived from Table* 9 *of Census Report No.* 2. *Thousands*

| Country | Category | | | | |
|---|---|---|---|---|---|
| | Saplings at least 10 feet tall and 3-6 inches quarter girth* | Timber†, by quarter-girth classes‡ | | | |
| | | 6—9¾ inches | 10—14¾ inches | 15 inches and above | Total Timber Trees |
| (1) | (2) | (3) | (4) | (5) | (6) |
| England .. .. | 17,084 | 8,366 | 9,151 | 9,585 | 27,102 |
| Wales .. .. | 6,049 | 1,881 | 1,322 | 1,092 | 4,295 |
| Scotland .. | 105 | 528 | 675 | 520 | 1,723 |
| Total .. | 23,238 | 10,775 | 11,148 | 11,197 | 33,120 |
| *Percentage of timber trees in each quarter-girth class* .. .. | — | *32·5* | *33·7* | *33·8* | *100* |

*Well-grown young trees between 3 and 6 inches quarter-girth with at least 10 feet of straight stem.

†Comprising all trees having a quarter-girth of 6 inches or over, together with a minimum length of 10 feet of apparently sound timber.

‡Measured over bark at breast height, 4 feet 3 inches above ground.

# APPENDIX C

## *Summary of Advantages and Disadvantages of Hedgerow Timber*

### ADVANTAGES

1. Trees provide shade from the sun, and shelter from wind, rain and snow, which are often important for livestock.

2. Shelter provided by trees growing in hedgerows, belts or groups may, in conjunction with hedges, be an important factor in preventing or minimising erosion in arable areas of light soil.

3. Shelter from the wind, especially in upland areas, can lead to improvement of grassland.

4. Trees on the farm attract and harbour some birds which are beneficial to agriculture, and which play an important part in the balance of nature in the district.

5. Trees, by checking the force of the wind, not only tend to reduce evaporation from the surrounding soil, but also to minimise extremes of temperature in their immediate vicinity. This can be of benefit both to crops and livestock.

6. Farm timber can do much to meet the demands for repairs and renewals to fencing, gates and buildings on the farm, and can enable the owner to build up a financial reserve against future capital expenditure.

7. Trees on the farm, if properly grown and tended, and felled before they become over-mature, are readily marketable, especially isolated trees, or those grown in rows or small groups, which can provide large-diameter logs of the kind required for special purposes.

8. The sale of properly-managed hedgerow and farm timber can yield a regular revenue, and on certain soils and aspects trees can be planted and felled within the lifetime of the planter.

9. The value of the timber in some hedgerows may exceed the value of the land the hedges enclose.

10. Properly tended trees on the farm contribute to the beauty of the countryside. Their presence increases the amenity value not only of residential properties but of many farms also.

### DISADVANTAGES

1. Where permanent pasture is ploughed shallow roots often cause damage to implements during the first two years of cultivation. Roots may prevent cultivation close to trees, so leading to waste of land, loss of production and spreading of weeds.

2. Tree roots compete with crops for moisture and nutriment and may cause impoverishment of the soil in their vicinity, with consequent loss of food production.

3. Tree roots may damage walls and dry-stone dykes; poplar and elm roots, in particular, are liable to block field drains.

4. Where the foliage and branches of large trees, especially hardwoods, overshadow a field, they prevent even ripening, reduce the yield, and interfere with harvesting; and fallen leaves block open ditches in the autumn.

5. Scattered trees on arable land, by breaking the even flow of the wind, may cause turbulence and eddies which can damage growing crops.

6. Hedgerows and hedgerow trees tend to harbour vermin and pests (e.g. rabbits, pigeons, hooded crows, and other birds) which are detrimental to agriculture, and may render their eradication more difficult.

7. Trees growing in hedgerows increase the difficulty and cost of mechanical trimming and maintenance of hedges ; they may cause gaps in the hedge itself, with the consequent risk of stock straying, and additional expense for fencing.

8. Trees may become dangerous and give rise to legal obligations and liabilities, for example if they fall and cause injury or damage.

9. Young trees are relatively more expensive to plant and maintain in rows or small groups, especially if they have to be protected against stock and pests, than are plantation-grown trees ; and farmers have not always the necessary labour for the purpose.

# APPENDIX D

## *Short Bibliography*

The following statutes and official publications are either mentioned in the Report or have a bearing on the subject of the enquiry:

### STATUTES

Crofters Holding (Scotland) Act, 1886.
Roads Improvement Act, 1925.
Hill Farming Act, 1946.
Hill Farming (Scotland) Act, 1946.
Agriculture Act, 1947.
Agriculture (Scotland) Act, 1948.
Town and Country Planning Act, 1947.
Town and Country Planning (Scotland) Act, 1947.
Agricultural Holdings Act, 1948.
Agricultural Holdings (Scotland) Act, 1949.
National Parks and Access to the Countryside Act, 1949.
Forestry Act, 1919.
Forestry Act, 1951.
Livestock Rearing Act, 1951.
Pests Act, 1954.
Crofters (Scotland) Act, 1955.

### OFFICIAL PUBLICATIONS

Memorandum on the Lay-out and Construction of Roads, paragraphs 26 and 27—(Memorandum No. 575, Ministry of War Transport—H.M.S.O., 1943).

Poplar Planting (Forestry Commission Leaflet No. 27—H.M.S.O., 1951).

Census of Woodlands 1947-1949—Woodlands of Five Acres and over (Forestry Commission Census Report No. 1—H.M.S.O., 1952).

Census of Hedgerow and Park Timber and Woods under Five Acres (Forestry Commission Census Report No. 2—H.M.S.O., 1953).

Memorandum on the Preservation of Trees and Woodlands, 1949 (Ministry of Housing and Local Government—H.M.S.O.).

Poplars (Forestry Commission Bulletin No. 19—H.M.S.O., 1952).

Rights and Obligations of Landlords, Tenants and Owner-occupiers of Agricultural Land (Agriculture Act, 1947, and Agricultural Holdings Act, 1948)—(Ministry of Agriculture and Fisheries—H.M.S.O., 1953).

Shelter Belts for Welsh Hill Farms (Forestry Commission Forest Record No. 22—H.M.S.O., 1953).

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Report of the Departmental Committee on Coastal Flooding (Cmd. 9165—H.M.S.O., 1954).

Report of the Committee on Land Utilisation in Rural Areas (Cmd. 6378—H.M.S.O., 1942, reprinted 1952).

Report of the Matchwood Working Party (Board of Trade and Ministry of Materials—H.M.S.O., 1954).

Memorandum on Tree Planting in Urban and Suburban Areas (Department of Health for Scotland).

Printed in Great Britain under the authority of HER MAJESTY'S STATIONERY OFFICE
by Cheltenham Press Ltd., Cheltenham.

(12624) Wt.3165/2233 K.32 2/56 23

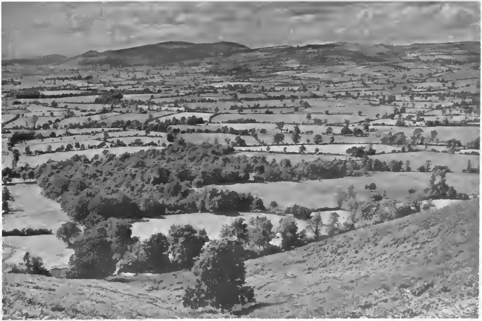

FIG. 1. The characteristic pattern of pasture, thorn hedgerow, oak and elm, generally regarded as "typical English countryside", as seen from the Long Mynd in Shropshire. (*Paragraph* 55)

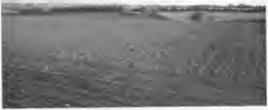

Fig. 2. Treeless country in the Cotswolds. (*Paragraph* 55)

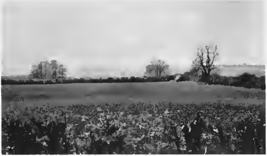

Fig. 3. Trees growing in odd corners of fields rather than in hedgerows. (Cotswolds). (*Paragraph* 59)

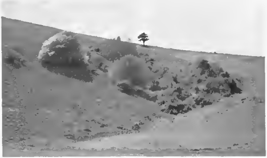

Fig. 4. A small waste area, useless for agriculture, which could be planted to provide timber and shelter for stock and improve the amenities. (South Downs). (*Paragraph* 72)

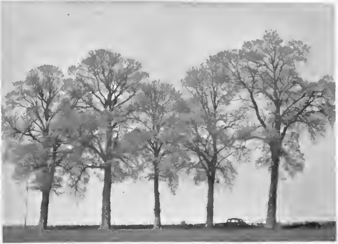

FIG. 5. Well pruned elms on the roadside near Faringdon, Berkshire. (*Paragraph* 62)

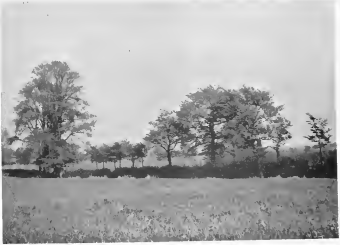

FIG. 6. Hedgerow trees of different ages ensuring a regular supply of timber. (Near Faringdon, Berkshire). (*Paragraph* 62)

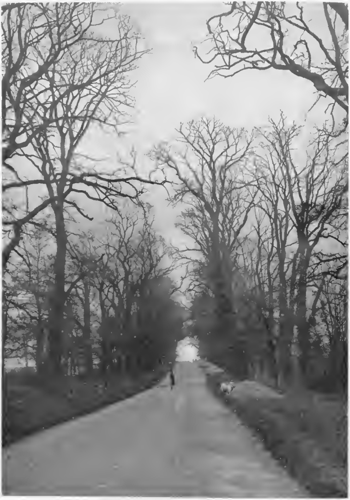

Fig. 7. Forest trees growing on the roadside at Kineton Elms, Warwickshire. (*Paragraph* 92)

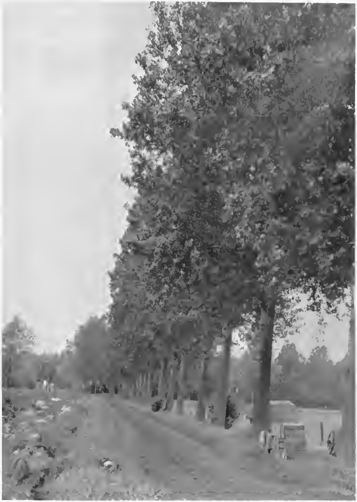

FIG. 8. Hybrid poplars planted in a single line along a field margin on the Ryston Hall estate in Norfolk. (*Paragraph* 130)

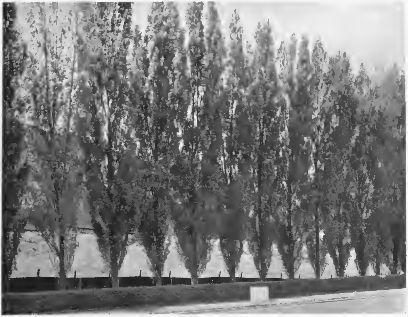

FIG. 9. Poplars screening an industrial establishment. (Guildford By-pass). (*Paragraph* 113)

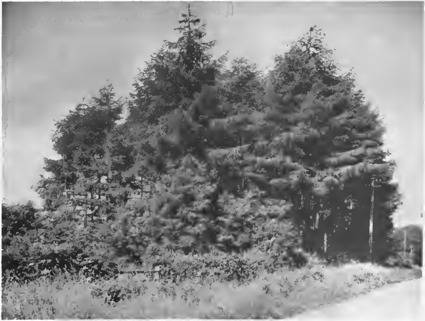

FIG. 10. A well-grown farm spinney near Fernhurst, Sussex. (*Paragraph* 123)

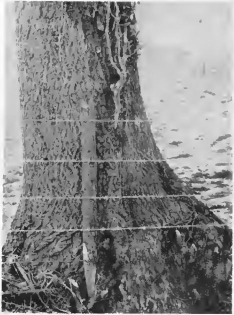

FIG. 11. Avoiding damage to timber by nailing fence wire to a stake instead of to a tree. (*Paragraphs* 60 *and* 124)

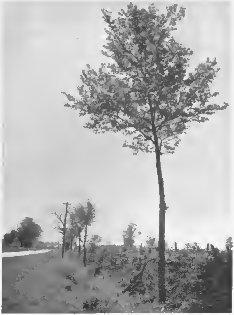

FIG. 12. Young elms grown from suckers preserved when cutting and laying a hedge near Shrivenham, Wiltshire. (*Paragraph* 145)